

# THE IRON AGE

THURSDAY, AUGUST 6, 1891.

## Improved Straight-Line Engine.

The first straight-line engine was an experimental one built in 1871, the second at Cornell University in 1875, the latter

ized and since that time have been building the engine known by that name. The following description, together with the accompanying drawings, show all the latest modifications of the engine as now built.

Although this engine has always maintained the original characteristics—that is,

taken from a handsome catalogue, which has just been issued.

### THE DESIGN.

This, differing as it does from all others, admits of some explanation. Any structure having considerable length and

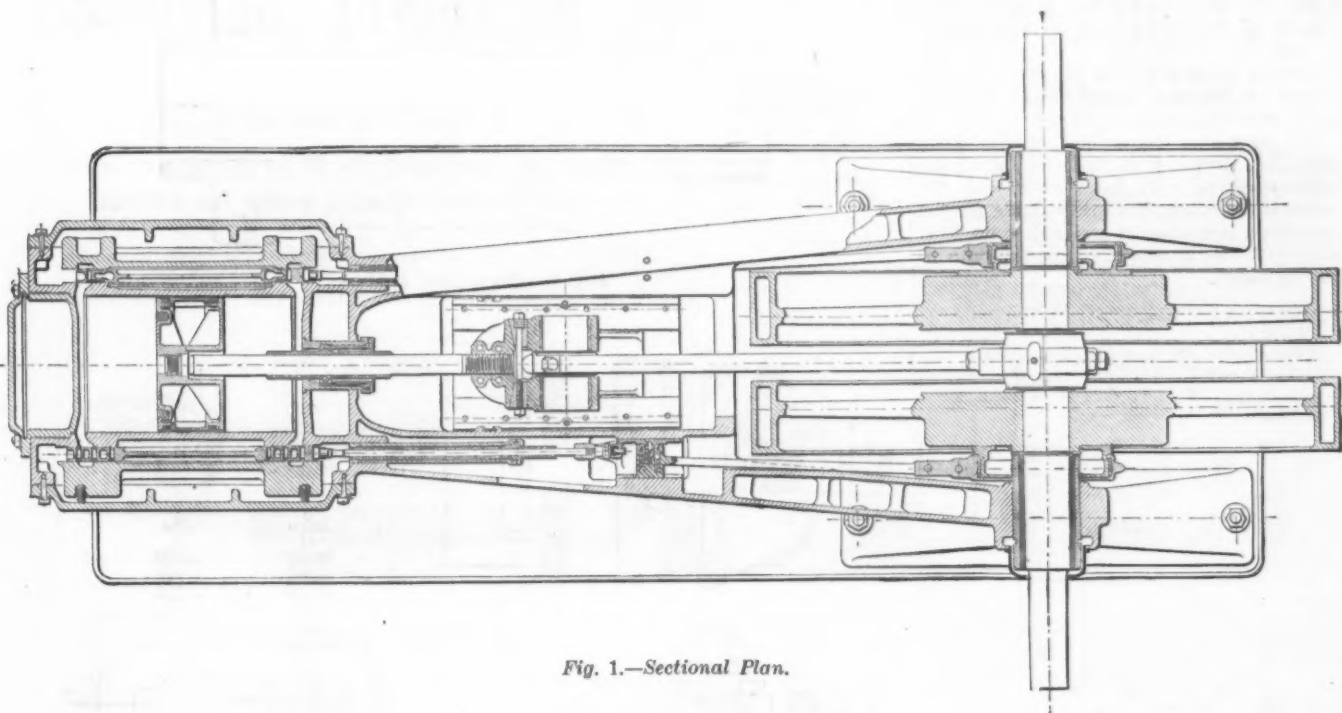


Fig. 1.—Sectional Plan.

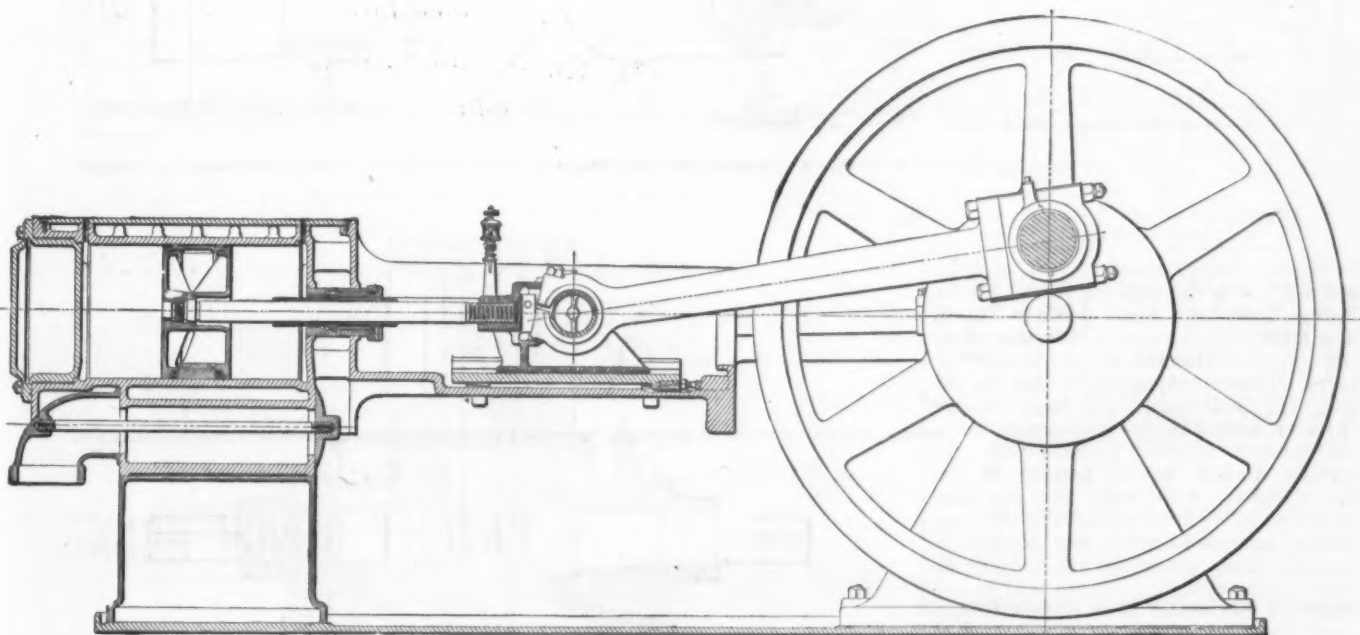


Fig. 2.—Sectional Side Elevation.

### THE STRAIGHT-LINE ENGINE.

being still in use. In 1879 the first engine was changed by the introduction of a governor of the present form, and on January 1, 1880, an upright rolling-mill engine was built by Sweet's Mfg. Company, which has been in constant service since. On February 1, 1880, the Straight-Line Engine Co. of Syracuse, N. Y., were organ-

a frame consisting of two straight arms running from the cylinder to the main bearings with the balance wheels between, and the whole resting on three self-adjusting points of support—such changes have been made as experience indicated would make a more perfect machine. The description and drawings here presented are

breadth in proportion to its depth must be supported on three self-adjusting points of support, to be free from torsion when resting upon an unstable foundation; all strains go in straight lines, and the plan of this engine conforms to these two leading ideas. The design is believed to be consistent in that all boundary lines are

straight, ending in graceful curves; all cross sections of stationary parts rectangular, with rounded corners, and all moving arms and levers double convex, wide and thin, with the longest axis in the direction of the greatest strain. It is believed that there are but few points where the design can be improved by dispensing with any of the features.

#### THE FRAME,

as will be seen in Fig. 1, is cast in one piece with the cylinder and steam chests. While this proves to be an expensive way it has the merit of remaining true if once made so, and the form being such as to place the metal in the best possible position to resist the strains, and as the amount of metal is enormously in excess of that required, it is believed no occasion will arise when any one having one of these engines will wish it made otherwise.

No wear can take place at the main journals; provision is made for facing the valve seats without interfering with the valve adjustment; the lower guide for the crosshead is a separate casting, so no wear comes on the frame except in the bore of the cylinder.

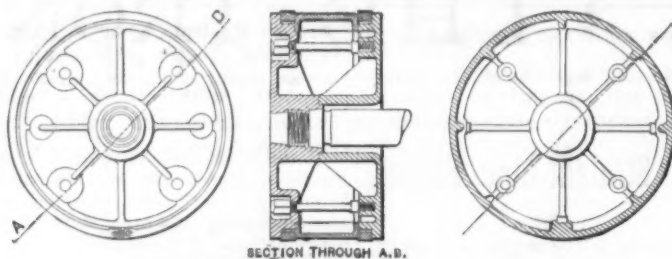
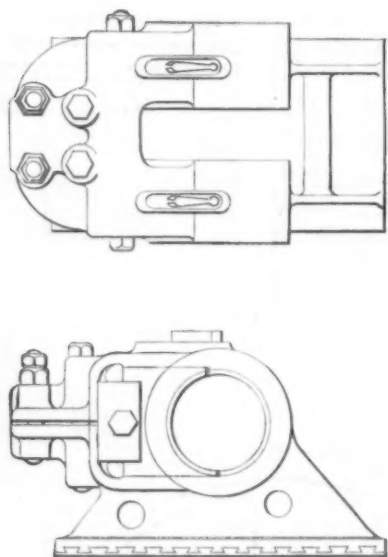


Fig. 3.—The Piston.

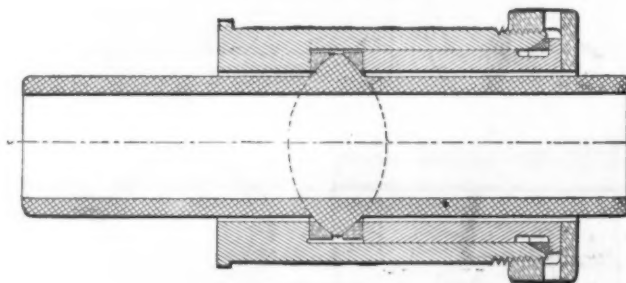


Fig. 4.—Piston Rod Packing.

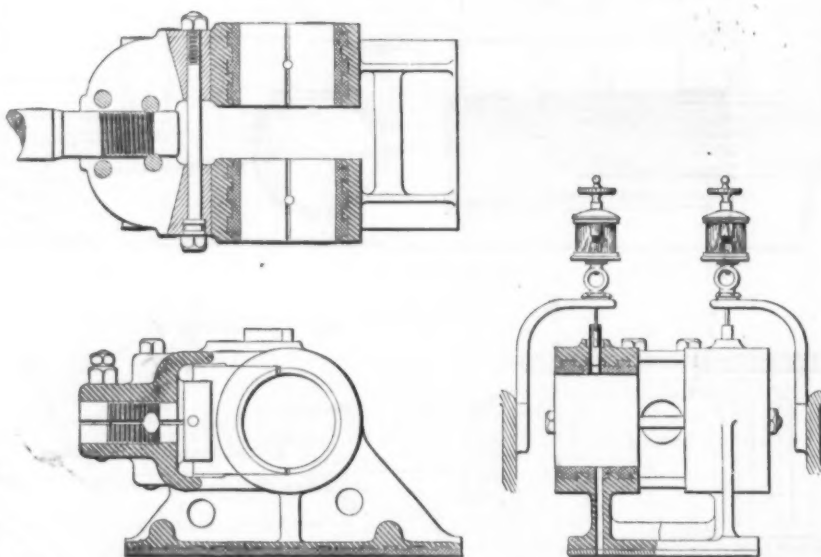


Fig. 5.—Details of Cross Head.

#### THE PISTONS

in engines smaller than 10-inch cylinder are solid, with rings sprung in, but for 10-inch and over they are as shown in Fig. 3. The main characteristic is that the packing rings are what the makers have designated "limited expansion"—that is, the rings are made much too large for the cylinder, sprung in with considerable force, and pinned in that position and the outside turned to a perfect fit to the cylinder. After this, the pin holes in the rings are filled to admit of the rings being compressed, while not allowed to expand. These pistons do not lead, nor do they cut the cylinder, and, as will be understood, run easier than pistons having their rings forced against the surface of the cylinder. As will be seen by examining the drawing Fig. 3, only a part of the thickness of the piston is used to secure it to the rod, this being done to give additional length to the piston-rod bush. The castings are very thin and light, and are thoroughly ribbed for strength. The only part that can wear is the bull ring, which is packed down to keep the piston in the center of the cylinder by liners made of narrow strips of sheet metal. Flanges cast on the spider and follower inside of the piston rings make them so stiff that only four studs are used. The pistons are secured to the rods by two taper fits, a parallel thread and shrink fit.

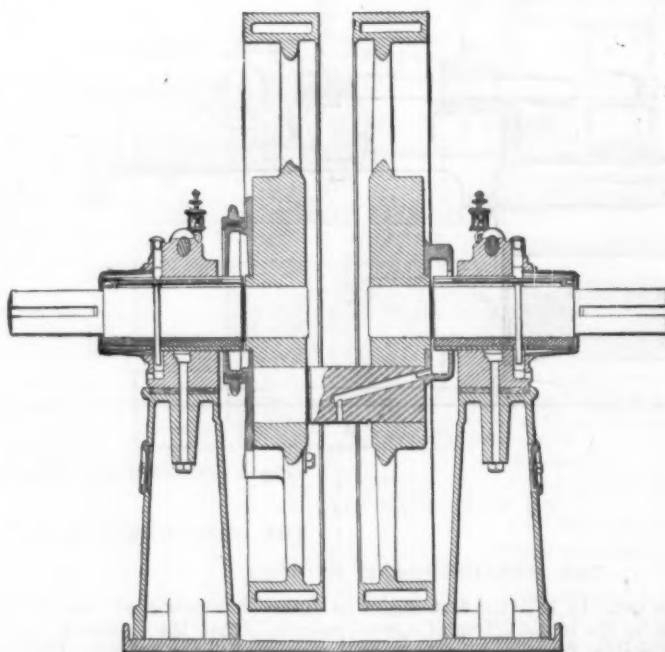


Fig. 6.—Crank Shaft and Wheels.

#### THE STRAIGHT-LINE ENGINE.

## PISTON RODS AND PACKINGS.

The piston rods are of steel, are ground and finished, and have their ends reduced, so that the babbitt bushings which form the steam-tight joints overrun at the ends.

leakage of steam by their length, as the brief time the piston is making a stroke is too short for the steam to work through. With perfect alignment between cylinder and guides, the piston rods pass through the bushes without con-

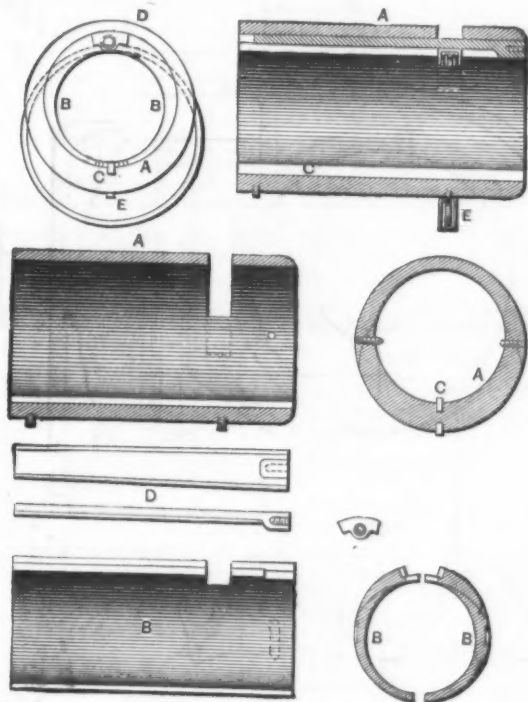


Fig. 7.—Main Journal Boxes.

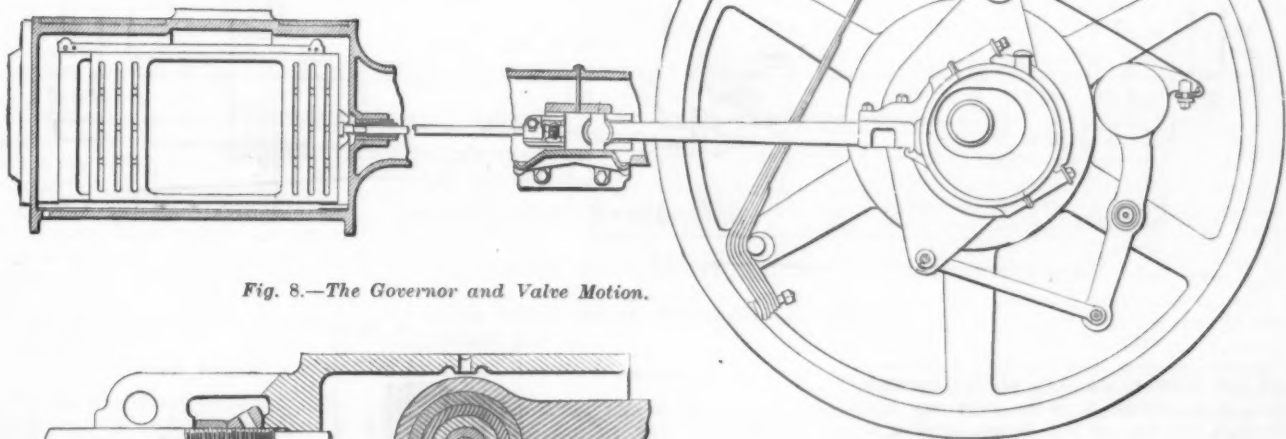


Fig. 8.—The Governor and Valve Motion.

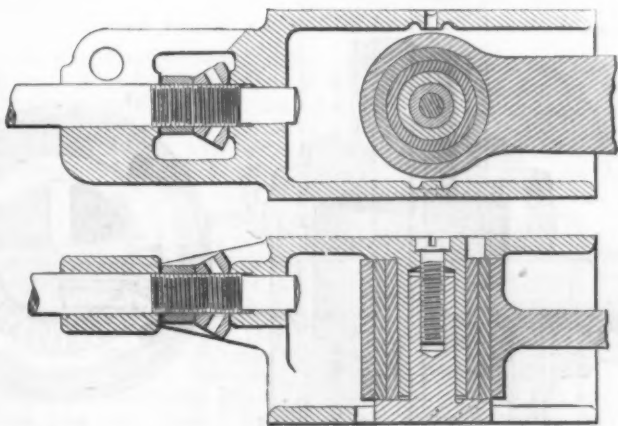


Fig. 9.—Valve-Rod Slide.

## THE STRAIGHT-LINE ENGINE.

The piston-rod packings, Fig. 4, are simply babbitt metal bushings, with reamed holes slightly larger than the rods, so as to be a free sliding fit. They rest in spherical seats, which are free to move in any direction. The bushings are made long and light, and are held in place by gland and screw cap. They prevent the

tact, and when this is maintained the wear is imperceptible. Under less favorable conditions they wear, but they can be compressed, when worn, so as not to leak, until they are worn out, and the cost of new ones is less, when taking into account the cost of working, loss of time and friction, than the cost of the ordinary hemp packing.

## THE CROSSHEAD

is fully shown in Fig. 5. Its principal peculiarities are that it is of steel or malleable cast iron; it is threaded on the piston rod and secured by being split and clamped by the binding bolts. The wearing surfaces of the steel castings are faced with babbitt. The crosshead pin is a hollow steel casting made fast to the connecting rod and turns in two adjustable babbitt-lined boxes in the crosshead. The object of this is to secure lightness, extra wearing surface, to prevent side swinging of the connecting rod at the fly wheel end and to give ready means of oiling. The method shown for adjusting the half boxes used in the larger engines has proved to be very satisfactory. The long wearing surface of the crosshead adds greatly to its easy running and durability.

The crosshead is what is known as the slipper guide sort, the lower guide being adjustable in the vertical direction. It rests upon and is bolted upon two inclined planes. By loosening the bolts and adjusting the screw at the end, the crosshead may be readily raised or lowered to bring the piston rod in perfect alignment.

The method of oiling is by two fixed sight-feed oilers without wicking. The oil from the metal points is taken off by metal channels and conveyed to the cross-

head pin, from which the drip is conveyed to the lower guide, and all waste oil and water is retained in the basin or conveyed away in an overflow pipe.

## THE CRANK SHAFT AND WHEELS

are shown in Fig. 6. The steel crank pin and shafts forced into the large bosses of the two wheels form a solid structure, dividing the strain equally between the bearings, and give an opportunity to balance the reciprocating parts properly, furnish a support for the governor and relieve the main bearings of a good part of the thrust of the piston. The method of construction is one calculated to insure absolute correctness. The crank pin is oiled while the engine is in motion by means of the eccentric chamber on the outside of one of the balance wheels and the holes drilled through the crank pin. The waste oil from the inner end of one of the main bearings finds its way to the crank pin also, so that the main bearing is sure to run dry before the crank pin does. The wearing surface of the crank and main journals are made exactly of the same length as the wearing surface in the babbitt-lined boxes,



and as the main shafts and crank have  $\frac{1}{4}$ -inch play through the boxes, grooves are turned in the shafts and cranks so that the boxes can overrun. The ends of the shafts are reduced to the size of standard shafting, one size smaller than the bearings. The waste oil thrown from the cranks of high-speed engines has always been a source of great annoyance, and one we have finally succeeded in pretty effectually overcoming by recessing the inner surface of the wheel rims so as to catch the oil and there retain it until the engine is stopped, or from which it can be wiped while the engine is in motion.

#### THE MAIN JOURNAL BOXES

will be understood by reference to the several views shown in Fig. 7.

These sleeves A are made eccentric and lined with babbitt metal cheek pieces B, which bring the shaft concentric with the outside of the shell. The cheek pieces are retained in place by babbitt metal feather, C, at the bottom, and a brass wedge, D, at the top. This furnishes a complete bearing at the bottom and sides, and one in which the wear can be compensated for. Narrow metal liners are introduced at the bottom, which can be removed and placed by the side of the wedge at the top. By this change the cheek pieces are shifted down, and being wedge shaped, the opening is closed. When the cheek pieces are worn out they can be duplicated with as much certainty of their fitting as any feature about the engine, and there is nothing but the babbitt metal lining to be changed, with no loss but the work and so much of the babbitt metal as is worn away

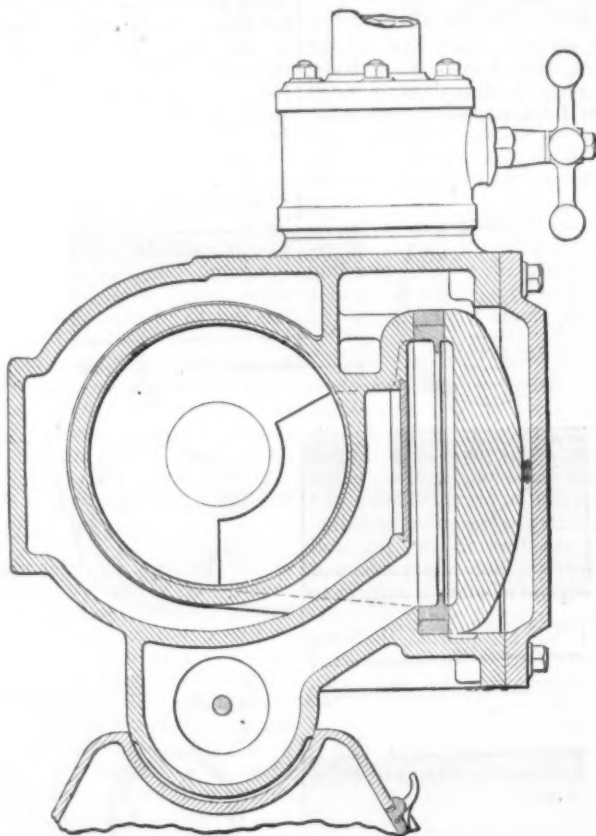


Fig. 10.—Section through Cylinder.

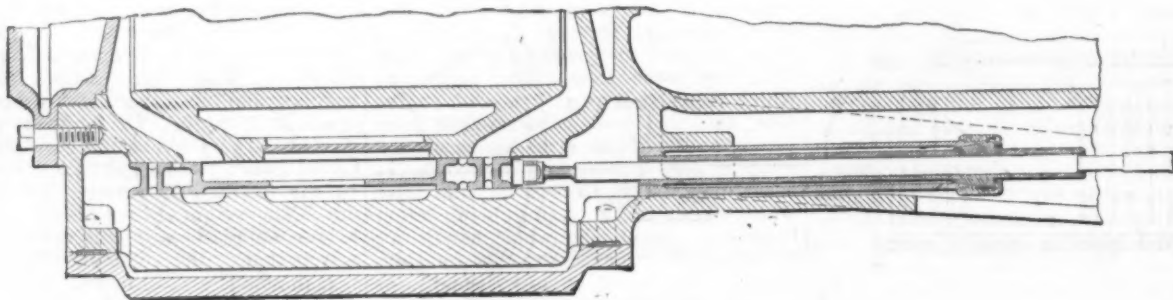


Fig. 11.—Horizontal Section through Valve.

and lost in remelting. It will be noticed that gaps about 1 inch wide are cut through the top of the boxes, leaving a portion of the shaft journal exposed.

Babbitt metal rings, large enough to slip over the boxes, are dropped into these recesses and hung upon the lower sides, dripping into the recesses before mentioned. When the waste oil in the recesses reaches a proper depth, these rings, rotating with the shaft, lap up the oil and deposit it on the upper surfaces continually. When the oil by its continuous use becomes foul, the pockets can be cleaned easily, as screw plugs are provided for that purpose. The method of returning the waste oil to the journal is entirely mechanical and constant during the lifetime of the engine.

#### THE GOVERNOR,

as shown in Fig. 8, which shows all the elements from eccentric to valve, consists of a single ball linked to the eccentric and connected to a spring by a metal strap, and so located and weighted as to counterbalance the eccentric and its attachments, and which controls the speed of the engine in this way: When the speed of the engine reaches the point where the centrifugal force of the governor ball overcomes the resistance of the spring the ball moves away from the center of rotation and in doing so it carries the eccentric nearer the

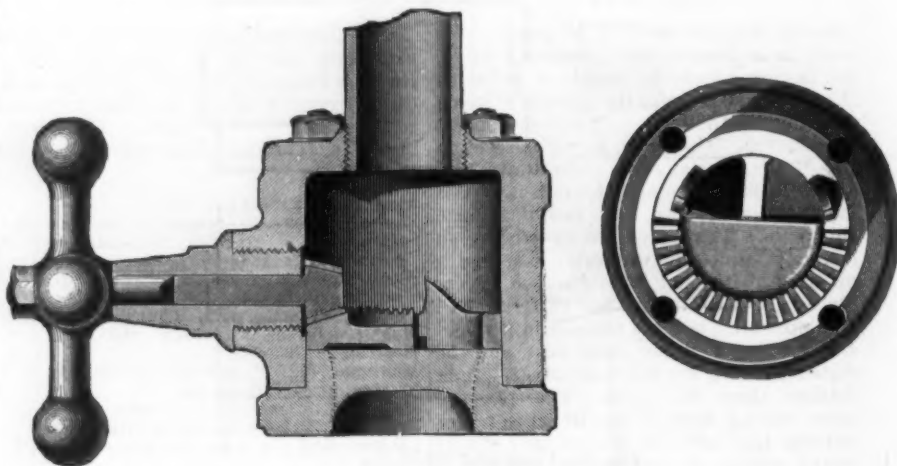


Fig. 12.—The Throttle Valve.

#### THE STRAIGHT-LINE ENGINE.

shaft, shortens its throw, and the travel of the valve, and reduces the steam admitted to the cylinder.

The ball is malleable iron, cast hollow, and loaded with lead and shot. It being

heavy, located some distance from the center of the wheel and running at a high velocity, has great centrifugal force and requires a strong spring to resist it. This forms a powerful governor.



The pin upon which the balls swing is secured to an arm of the fly wheel and is hardened and ground. The arm of the governor ball is bushed with a hardened and ground bush. A large hole is bored in the center of the pin and plugged at the outer end, forming an oil chamber; small holes drilled from this chamber to the wearing surfaces insure thorough lubrication.

The metal band connecting the governor ball to the spring is for the purpose of reducing the number of pieces, avoiding friction and relieves the central pivot of a large part of the strain.

#### THE ECCENTRIC

is cast upon a swinging plate, which is pivoted to the boss of the fly wheel, special pains being taken to make it both light and strong. The pivot or stud upon which it turns is made long and fast in the eccentric plate, and is provided with the same means of oiling as the governor ball—that is, with a chamber in the pin and holes for the introduction and passage of the oil. The eccentric plate is subject to a twisting strain, to resist which, in addition to the long stud and journal, there are two links connecting it to the governor ball. The eccentric face is flat, with ledges on the strap to hold it in place, and the wearing surfaces are lubricated from the inside when in motion, and an oil or tallow pocket is cast on the strap and fitted with a cap, as shown.

#### THE VALVE MOTION.

has two peculiarities: The position in which the eccentric plate is pivoted to the wheel, which gives a variable lead to the steam admission, and the direct connection between eccentric and valve. The valve rod slides, Fig. 9, are of unusual length, and large on their wearing surfaces, with provision for compensating for wear, and the connections are hardened and ground steel bushings, both in rod and on the pins, interchangeable so they can be renewed and the joint made new. The method of securing the slide to the valve rod is shown in Fig. 9. This gives delicate adjustment, maintains absolute alignment and absolute security, except from breakage. The method of securing the rod to the valve admits of the valve being removed and returned without disturbing the adjustment. The valve rod packing is simply a long babbitt sleeve made in duplicate.

#### THE VALVE

controls the distribution of steam very much as is done by the common D valve, but having a variable travel controlled by the governor, it varies the amount of steam admitted as the work imposed on the engine varies. The valve, as will be seen in Fig. 11, is a rectangular plate, quite thin and with five openings through it. It is made flat on its two sides and of uniform thickness. The valve works within an opening formed by the valve seat and a pressure plate and two distance pieces placed above and below it. (See Fig. 10.) The pressure plate has recesses in it opposite the ports in the valve seat, and the distance pieces are made about  $\frac{3}{16}$  inch thicker than the valve. The pressure plate resting against the distance pieces relieves the valve of all pressure, and it works within its opening the same as a piston valve. By the recesses in the pressure plate and the small openings through the valve double ports are opened both for steam admission and exhaust. The valve being thin, and the distance pieces being exposed to the steam the same as the valve, no trouble is experienced by having the valve bind by expansion. Overpressure by water in the cylinder is relieved the same as by a slide valve lifting from its seat, and while the valve is liable to wear down by riding on the lower dis-

tance piece, it does not open a leak over the top, as is the case with piston valves. An allowance of about  $\frac{1}{16}$  inch is made between the valve-rod coupling and valve for the valve to wear down, after which, as wear occurs, the lower distance piece can be raised up by thin packing pieces, so as to restore the valve to its original position.

As wear occurs, it is but the work of an hour or two to reduce the distance pieces to and maintain a steam-tight, free working valve. The advantage of a balanced valve is not simply that of avoiding the loss due to friction, thus preventing wear, but it admits the use of a large valve and a large travel, giving ample port openings both for admission and release of the steam. Such a valve possesses all the requisites for a perfect distribution of steam, and is only limited by the perfection or imperfection of mechanical devices by which it is operated.

#### THE THROTTLE VALVE,

as will be seen by referring to Fig. 12, consists of a flat seat, circular in form, having a semicircular opening through it, and a valve whose face is a counterpart of the valve seat, and by means of a semicircular bevel gear on its upper surface and a pinion it can be rotated half way around. When the valve is set in such a position that the two openings coincide, there is a straight way passage for the steam, and when turned in the reverse way the valve is closed. There is no face exposed to the action of the steam when the valve is open, and when reversed none exposed to rust. Thus, protected from both the action of steam and rust, the faces remain perfect and steam tight for a long time after the warp by changes of temperature has been taken out. The faces being flat, they can be refitted by either scraping or grinding more readily than any other form. The pinion by which the valve is rotated is cast on the stem, and that made a steam-tight joint by a good fit of the stem and a ground joint at the shoulder, or packed in the usual way. The threads on the bush which screws in the casing being larger than the pinion, the whole handle arrangement is removed together for shipment. The cylinder oiler should be placed in the pipe above the throttle, so that the throttle is oiled as well as the other working parts. The cut shows the throttle half open.

The third and last of the three steamers contracted for by the Canadian Pacific Railway Company, named the Empress of China, recently made her trial trip and attained a speed of 19 knots. The following is the official data concerning the trial:

Mean draft, 22 feet 6 inches.  
Steam in boilers, 160 pounds per square inch.  
Steam in I. P. receiver, 75 pounds port, 72 pounds starboard.  
Steam in L. P. receiver, 19 pounds port, 18 pounds starboard.  
Vacuum, 27 inches port, 27.5 inches starboard.  
Mean revolutions per minute, 89.47.  
Mean speed, 19 knots.  
Maximum I. H. P. on 1 mile, 10,128.  
Maximum revolutions, 282.  
Mean I. H. P. on 2 miles, 10,068.5.  
Mean I. H. P. in consumption trial, 7,979.  
Consumption per hour—pounds per I. H. P., 1,594.  
Mean speed on consumption trial, 16.6.

The gross tonnage is 5920, and the total dead weight capacity, with a mean draft of 24.6, is 4000 tons.

The wheat crop of the United States is moving to market at a rate not equaled since 1886. The receipts at the nine large primary points for the first four weeks of the cereal year, which begins with July, were 12,658,000 bushels, against 5,860,-

000 in the same time last year, and little more than 6,000,000 in each of the two years preceding. Of course these figures do not represent the present average, the initial movement being a small one. The receipts now exceed 1,000,000 bushels per day, and are apparently still on the increase. Evidently there is not yet any of the holding back that some members of the Farmers' Alliance are said to have advised. The grain is being sent forward as rapidly as possible, and sellers are realizing for it prices which they must admit to be "good" when the magnitude of the crop is considered. And the wheat is being taken freely for export. Vessel room on the ocean chartered several weeks ahead is filled up as fast as it arrives in port, and it is said the arrangements already made cover most of the tonnage that will be available for several weeks to come.

#### Steel Chimneys for Mercantile Buildings.

Steel chimneys are being erected in connection with some of Chicago's tall buildings. The Fair building has at present the tallest under construction. The chimney, when completed, will be 250 feet high, being considerably higher than any other in the city, the highest at the present time being the one at the Gottfried Brewing Company's plant at Archer and Stewart avenues, which is 175 feet. The outside diameter is 9 feet 5 inches, while the steel varies in thickness from  $\frac{5}{8}$  inch at the top to  $\frac{3}{4}$  inch at the bottom. The lower 75 feet of the chimney is lined with fire brick 8 inches deep, formed to fit the shell compactly all around. Above this it is lined with hollow tile. This lining is supported at intervals of 25 feet by angle iron riveted to the steel shell; in other words, the chimney is lined in a manner similar to blast furnaces and foundry cupolas, and no expansion by heat can lessen its strength. The joints are all hot riveted. The steel shell is carefully protected from corrosion and from any attacks by the weather by painting inside and out. The weight of the chimney is spread to the foundations in the same general way as that of the columns of the building, the base or foundation on which it rests being constructed in the same manner. The ground is first covered with a layer of cement, then two layers of steel rails in cement and one layer of I beams, on which the cast-iron shoe which takes the shell of the stack rests. The capacity of the chimney is 12 60-inch boilers 20 feet in length.

This is the first time this material has been used in the construction of the chimneys of mercantile buildings. The magnitude of the building and the necessity of economizing in space, the foundations for the columns occupying about all the ground, led the architects to adopt steel as the material for this purpose. Brick has been used almost entirely heretofore, but upon investigation it was found that the weight of a brick chimney of this size would be almost 700 tons, while of steel construction it would weigh, including the linings, a little less than 250. The outside diameter of the present chimney is 9 feet 5 inches, while were it constructed of brick it would be 16 feet 6 inches, thus making a great saving in space. Another consideration was the time consumed in construction. A brick chimney of this height, 250 feet above the sidewalk, should not be built faster than 2½ feet a day on account of the settlement and the setting of the mortar, while of steel it can be erected at the rate of 20 feet a day. Another important consideration is that it costs only about 60 per cent. of what a brick chimney would cost. Steel has been used in the construction of chimneys for iron mills and factories.

### An Improved Screw Machine.

We herewith illustrate the latest improved pattern of the No. 114 screw machine built by the Jones & Lamson Machine Company of Springfield, Vt. The machine has been increased so greatly in weight and capacity that it is practically a tool of new design. The principal dimensions are: Spindle hole,  $2\frac{1}{4}$  inches in diameter; working length, 14 inches; swing, 20 inches; belt width,  $4\frac{1}{2}$  inches; bed length, 6 feet 7 inches; weight, 4000 pounds. The head is very compact, with the back gears beneath entirely inclosed and a gear cover for the large gear on the spindle. The back gears are operated while running by means of the left-hand lever on the head. They are of the friction-positive type, a friction clutch locking the spindle to cone and a positive clutch locking the spindle to back gears. This gives smooth running—no slip and no intricate mechanism.

The automatic chuck and revolving roller feed are operated at the same

through the turret when desired, and there is no yoke or eye to hinder the proper setting of the tools. All sizes of work have their proper speeds for cutting and threading and the feeds are graded according to the latest screw machine practice. The levers are all conveniently located so the operator need not leave his post. An oil pump supplies the oil. No pains has been spared to make the tool modern in every respect.

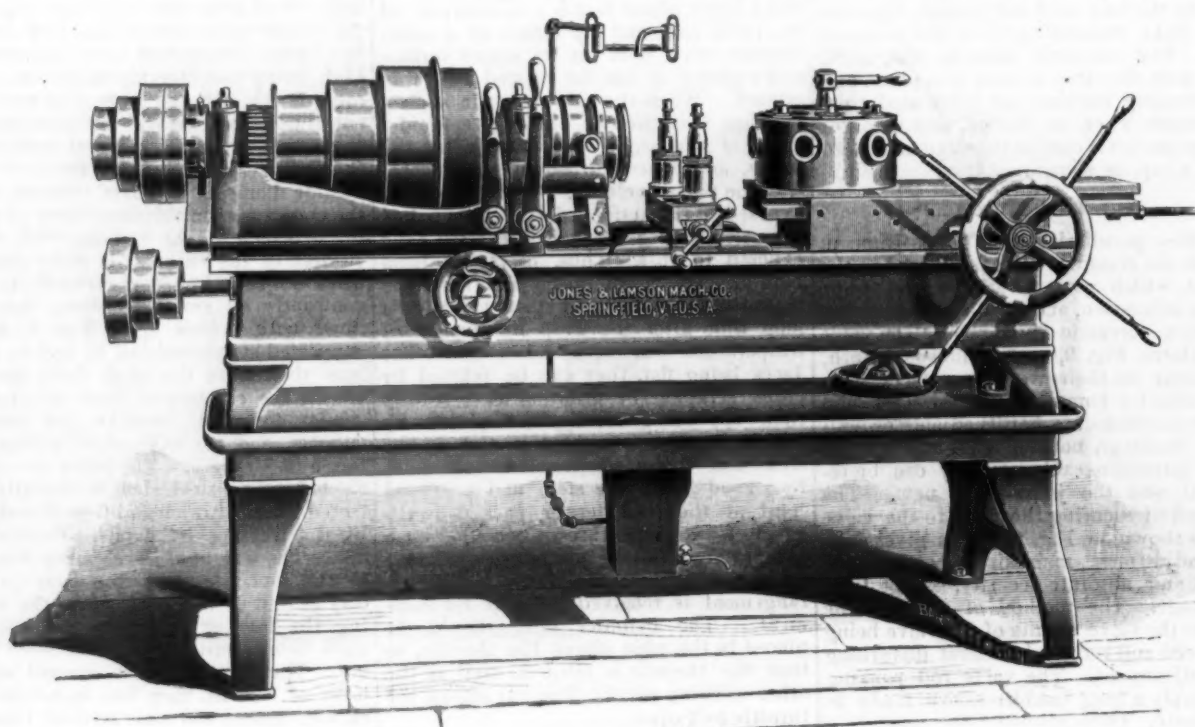
### Bidding for Heavy Guns.

Interesting discussions are said to have taken place in the Board of Ordnance at Washington since the opening of the bids for the construction of high-power guns, about three weeks ago, and the causes for delay in making the awards are the subject of conjecture:

The call was for 25 8-inch, 50 10-inch and 25 12-inch breech-loading steel rifles. The first appropriation for this purpose was \$3,775,000, and the result showed

plant. Their work, therefore, for the army would not be experimental, but the result of estimates founded on their present operations not only for the navy but for the army also, since they are furnishing gun forgings for the latter as well.

We may assume, accordingly, that the delay in awarding the contracts is sufficiently accounted for by the need of careful deliberations in a matter involving nearly \$4,000,000, by the necessity of deciding whether it will not be better for the country to accept the higher set of offers in order to get the guns sooner, finally, by the propriety of waiting for the presence of the president of the Board, General Schofield, who was not able to attend the earlier sessions for the consideration of this subject. With the award of this contract there will be a prospect of getting a prompt supply of guns for coast defence, such as there could not be with reliance on Watervliet only, or even on an additional Government gun factory. Indeed, these 100 guns will form only a small part of what are imperatively



SCREW MACHINE, BUILT BY THE JONES & LAMSON MACHINE COMPANY.

time by the right-hand lever on the head. When thrown toward the turret the chuck opens and the roller feed pushes the bar against the stop gauge. The lever is then thrown back and the chuck grips the bar. A new length of work is thus almost instantaneously procured without stopping the machine. This gives from 30 to 50 per cent. more actual cutting time for the tools. This chuck is very short, stiff and powerful. The roller feed is a notable improvement over either the old style weight or ratchet feed.

In the automatic feeding device there are two rollers bearing on the stock, one on each side. These hold the work centrally in the spindle while the cut is being made. When the right-hand lever above mentioned is moved beyond the point necessary to open the chuck, the rollers are made to revolve and thereby feed forward the stock. The cut-off carriage has reversible power longitudinal feed operated by the hand wheel and nut on bed. The turret slide is provided with a powerful automatic feed with the new sensitive knock-off. It is operated by the curved lever back of the pilot wheel. The binder bolt to turret gives clear way

that no private factory would undertake them at that price. The South Boston Iron Works and Midvale Steel Company proposed to furnish them, with the specified ammunition, but the smaller of the two bids exceeded \$5,000,000. Accordingly Congress raised its maximum to \$4,250,000, with certain modifications as to time and other particulars. In the bids of July 13, the Midvale Company stood by their old bid of \$5,359,500, and the South Boston Works, now established in Kentucky, made a still higher one. But a third competitor entered, the well-known Bethlehem Company, which submitted five distinct bids under each head, the difference being made to depend upon the times of delivery. The lowest totals were \$3,694,838.55, and the highest only \$3,989,000, so that both were well within the amount which Congress had authorized the Board to expend. With this great difference in the bidding goes the other fact that the Bethlehem Company is of unquestioned capacity and actual experience. They are now furnishing the forgings for millions of dollars' worth of steel armor and guns for the navy, and have themselves laid out millions on their

needed for our ports. Should the Fifty-second Congress call for another 100 guns from private contractors, the bidders of July 13 would have a chance to enter the lists again, re-enforced, perhaps, by Carnegie, Phipps & Co. of Pittsburgh, or by other works extensive enough to undertake so great a task.

### Omaha's Bridge Case Decided.

Gould's bridge case at Omaha, which has just been decided against the Union Pacific Company by Judge Brewer, and in favor of the Rock Island, St. Paul and other companies is of no ordinary importance. The complainants contracted with Charles Francis Adams, president of the Union Pacific, for the joint use of the bridge at Omaha, which action Mr. Gould, who subsequently came into control repudiated. The position taken by the Union Pacific was that the contract was one that that company had no power to make, being beyond their corporate authority; that the consideration was inadequate, and that a court of equity had no power to specifically enforce such a contract. The decision of Justice Brewer has denied the



several positions taken. By the contract as interpreted by the court the railway systems of the Rock Island and Milwaukee and St. Paul are admitted into the city of Omaha. In addition to this, Lincoln, the capital of Nebraska, secures a new railway, and Denver, Colorado Springs and Pueblo a new short line between those points and Chicago and the East. It is understood that an appeal will not be allowed to operate as a stay of proceedings.

### The Hercules Electric Motor and Dynamo.

The accompanying cut illustrates a new motor which is placed on the market by the Zucker & Levett Chemical Company of New York. As can be seen, the motor is of the inverted horseshoe type, in which the whole of the magnetic circuit is stamped out of one sheet of best Swedish iron, the number of sheets being bolted together to form the magnet frame. The plates are thoroughly insulated to prevent the generation of Foucault currents and consequent heating. The field coils are

have been very carefully worked out and all parts are adjustable. Quite a number of the Hercules fan outfits are in daily use, and, it is said, are giving thorough satisfaction. These machines will be manufactured in all sizes from  $\frac{1}{2}$  horse-power up for both light and power.

### The Short Cut in Steel Rolling.

Attempts have frequently been made by American steel manufacturers to avoid the use of the blooming mill or ingot hammer. Thus far, however, the only works to our knowledge in which it is done successfully in this country are the Atkinson Steel and Spring Works at Harvey, Ill. These works have not merely experimented with the process, but they are now making their entire product in this way, and have been doing so for several months. Difficulties were encountered at the outset which were pronounced insurmountable by practical steel rollers of long experience, but the pluck and perseverance of the president of the company, F. M. Atkinson, and the untiring efforts of his very capable mill

pillar in the center of the pit and at the other end runs on wheels on a rail which skirts the edge of the pit. The ladle can thus be shifted easily over the whole area of the pit. The molds are set in the pit in groups of 30, with one pouring hole for each group. A heavy cast-iron plate, with gutters running from the center to the ends, forms a base for each group. The metal enters each mold at the bottom, filling the entire 30 molds simultaneously. At present 150 ingots are cast with one ladleful of metal. The ingots are usually 4 inches square, sometimes 5, and about 3 feet long, weighing about 200 to 250 pounds each.

The casting pit is further served by a crane of excellent design. This crane is operated by steam power, swings in a circle, hoists, lowers, &c., at the touch of the lever, and is especially serviceable in the rapid work required of handling so many ingot molds in and out of the pit for three heats daily. The ingots as cast here are high in carbon, being exclusively intended for springs, and by the patented process adopted in the casting are remarkably free from blow holes and piped ends. The rolling mill used is simply a train of 12-inch three-high rolls, such as would be required for breaking down and finishing billets. The ingots are heated in a gas furnace with four doors, care being taken not to get them too hot. They are then rolled into rounds ranging from  $1\frac{1}{2}$  inches in diameter to  $\frac{1}{2}$  inch, according to the requirements of the spring shop. Flats can be and are, however, rolled equally well. The bars rolled in this way will bear the closest inspection, notwithstanding the defiance of ancient methods in steel-rolling practice. They are free from flaws and well surfaced. When coiled into springs they endure the rigid tests applied with a remarkably low percentage of failures, showing better results in that respect, according to the records of the company, than when they were running on purchased steel. Due credit must, of course, be given in this connection to the steel-melting department, where a mixture is made with special reference to the requirements of the railroad spring trade. But the steel certainly would appear not to be impaired in quality by the short cut taken in rolling.

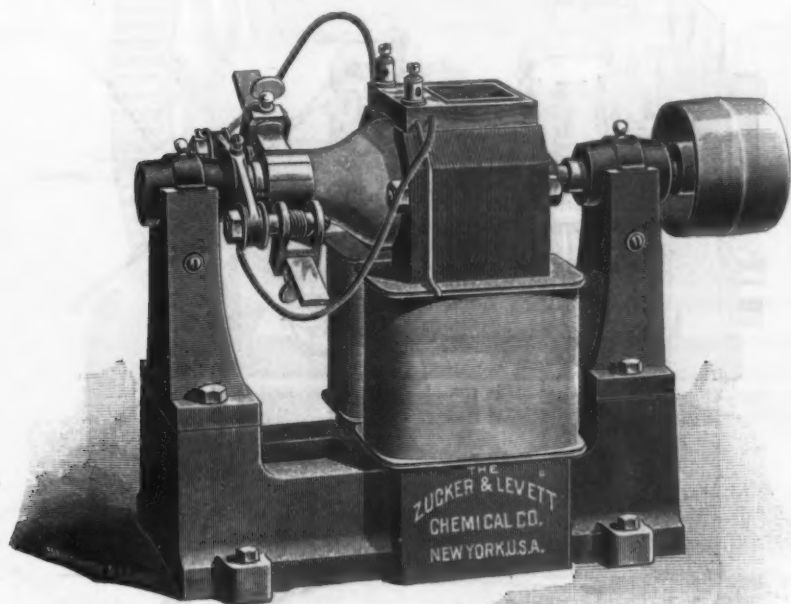
The spring shop of the company is fitted with helve hammers, coiling machines, shapers, &c., and is served by a separate gas heating furnace. The spring shop at present is hardly equal to the capacity of the steel works, but improvements are being made which will when completed test the capacity of even the enlarged steel plant.

### Importing Tin-Plate Workers.

The Secretary of the Treasury has written the following letter to Hon. F. G. Niedringhaus of St. Louis, in regard to the importation of skilled workmen for his tin-plate mills:

Replying to your letter of the 21st inst., in which you ask, on behalf of the St. Louis Stamping Company, "whether you must go through any particular form to import skilled labor for your tin-plate mills," I have the honor to say that no regulations have been issued by this Department prescribing forms relating to that subject.

It is not the practice of this Department to express opinions or to make advanced rulings on hypothetical cases that may possibly arise; but lest you might draw improper inferences of permission from the above answer to your question, your attention is called to the fifth section of the act entitled "An act to prohibit the importation and migration of foreigners and aliens under contract and agreement to perform labor in the United States, its Territories and the District of



THE HERCULES ELECTRIC MOTOR AND DYNAMO.

separately wound on brass spools and the distance between the magnet cores is slightly larger than twice the depth of one coil, thus allowing the same to be slipped over the core. The plates of the armature, which is of the modified Siemens type, have teeth forming longitudinal channels on its periphery, in which the coils are wound. These teeth, besides reducing the magnetic resistance to a minimum, prevent the coils from flying out due to the centrifugal force, and the consequent burning out of the armature. The magnet frame is bolted to an iron base, having iron standards and self-oiling bearings even in the smallest size of machines. By this method of construction the makers say they obtain a highly efficient and simple form of motor. There is said to be absolutely no sparking if the commutator and brushes are kept in fair condition, the magnetism of the field greatly overpowering that of the armature even when the machine is working at full load. The automatic motors are mostly plain shunt wound with an armature of extremely low resistance. The fan motors are plain series wound and run a six-blade 12-inch propeller fan at 1600 revolutions per minute, taking one ampere at 120 volts. The mechanical details of these machines

staff overcame all troubles, and the process now seems as well established as the regular method of hammering or blooming large ingots into billets before rolling into bars.

These works were formerly known as the Atkinson Car Spring Works, and for years were located within the city limits of Chicago. Spring steel was purchased from steel manufacturers. Last year the company decided to manufacture their own steel stock, and having secured a site at Harvey proceeded to erect open-hearth furnaces and a rolling mill. When this part of the plant was completed, early in the present year, the spring shop was removed to the same location. In erecting the steel works President Atkinson determined to avoid the heavy investment of capital required for the erection of a blooming mill, and arranged for casting small ingots of billet size.

The production of steel has hitherto been limited to the output of a single 15-ton Siemens-Martin furnace, but the company have just erected another 15-ton furnace of the Swindell pattern, which will shortly be put in operation. Ingots are cast in a semicircular pit. The ladle is supported on a truck which in turn rests on a framework pivoted at one end on a



Columbia," approved February 26, 1885, and the suggestion is made that I am not prepared at this time, and with the data before me, to express any opinion as to whether skilled labor for the St. Louis Stamping Company cannot be otherwise obtained than by the importation of alien laborers.

I do not understand that it was the purpose of the honorable Superintendent of Immigration, in his recent letter to you, to express any opinions other than those involved above.

#### A Chicago Workingman's Hotel.

When the new seven-story building at School and Clinton streets, half a block south of Madison street, Chicago, is completed it will be opened up as the model lodging house of the country, under the name of the Friendship Hotel. The building is being constructed by John M. Clark, Collector of the Port, but all the interior work and finishing will be done by Alam Moris and W. J. Foy, who will be the landlords.

Prior to arranging the plans for the interior Mr. Moris went to Europe and inspected the lodging houses of all the great cities. He found those of England and Scotland superior to all others, and especially profited by his visit to the Seaman's Home in Liverpool. After his return he employed an architect, who followed out his ideas in planning the interior arrangement of the Friendship Hotel, Mr. Clark having previously agreed to erect the building, which covers two city lots and is a substantial structure, with fair architectural pretensions.

The hotel, which is intended for the accommodation of unmarried men from the ranks of mechanics and laboring classes, will have 540 rooms fitted up on the six upper floors of the building. Each room is intended for the accommodation of but one guest, and each will be furnished with an oak bedstead, with wire springs and moss mattresses, a table, a chair and a wardrobe. The rooms will be 6 x 7 feet in dimension and be divided by partitions 8 feet high, and a clever device will be utilized to keep each guest's room sacred from intruders and thieves. The coping of the partitions will be covered with copper, under which will run a wire connected with an electric contrivance in the office. The weight of a finger placed on the copper band will be sufficient to send an alarm to the office and to notify the watchman on the floor that some one is up to mischief. By means of this contrivance Mr. Moris holds that every guest's room will be as secure as though it were surrounded by walls of steel.

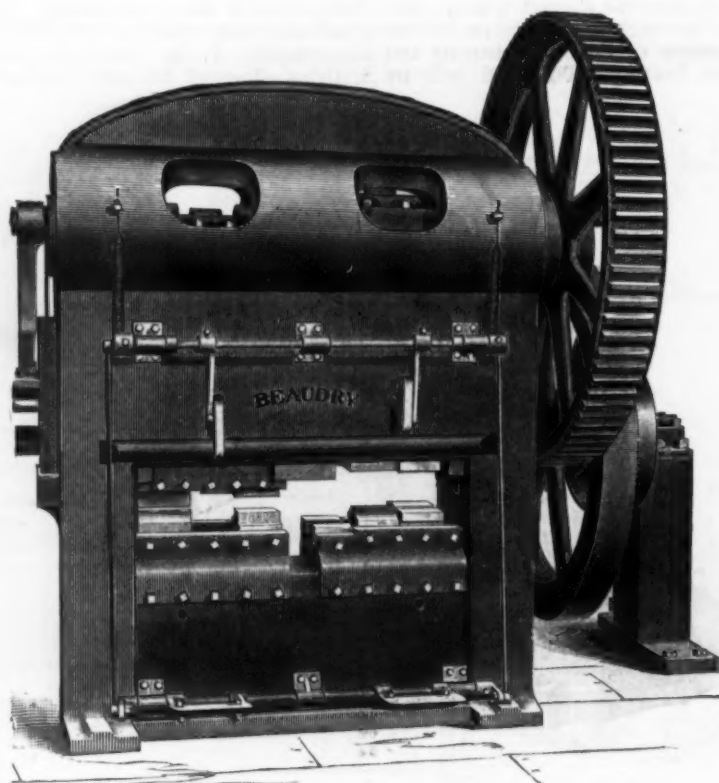
The office will be located on the first floor, on which also will be arranged a reading room and a library, which will be one of the features of the hotel. No liquor or card playing will be allowed in the hotel, but a room will be set apart for players of chess, checkers and dominoes. A barber shop, where the patrons of the house will be given special rates, will also find space on this floor. In the basement there will be a lunch room with prices as low as possible, and also a bathroom with six tubs, which will be at the services of lodgers from 5 o'clock in the morning until midnight. New applicants for lodging will be required to use the bathroom the first day they are inmates of the hotel—just as a guarantee of good faith. On the six floors on which the rooms are located there will be a lavatory with marble basins and all the things necessary to promote cleanliness, including hot and cold water, soap, towels, shoe blacking stands, clothes brushes, &c. The whole building will be heated by steam and lighted by gas and electricity.

In the construction of the building the subject of ventilation has received special

attention, and on each sleeping floor will be 12 ventilators 12 x 18 inches and with a capacity of changing the atmosphere of each floor every 20 minutes. On the top floor will be a hospital ward of two rooms, which will be in charge of competent nurses and under the supervision of a regular medical practitioner who will be retained by the owners of the hotel. This hospital will be open to all regular patrons of the house. Those who are able will be expected to pay for their treatment and the necessary medicines, but none will be refused admission to the hospital on account of lack of means. An elevator will be one of the luxuries of the establishment.

Rooms will be let at 15, 20 and 25 cents a night, or \$1, \$1.25 and \$1.50 a week. The Friendship Hotel will be ready to receive lodgers September 1, when it will be formally opened with music, literary exercises and other big doings. Messrs. Moris and Foy are already operating three

being made long or short by simply pressing more or less upon a conveniently placed treadle, in all cases the movement of the plungers being equally positive. When the treadle is pressed downward a wedge is introduced between the slide and plunger, the distance the wedge is moved governing the point to which the slide descends. This places the machine under the perfect control of the operator, whose hands are free to handle the work. The lower end of the plunger is formed into steps of  $\frac{3}{8}$  inch rise, the wedge or "step clutch" being correspondingly stepped. It is evident that when the wedge is introduced as far as it will go the maximum stroke will be obtained, the stroke being lessened if the wedge is not introduced so far. As will be observed, the press is built in a substantial manner, and its solid rectangular " housings," of great weight and strength, adapt it to the severest kind of work.



THE BEAUDRY DUPLEX PRESS.

lodging houses on the West Side and are caring for 725 rooms. Mr. Moris said: "We will make the Friendship the model lodging house of the world. It will be a home for our men, and we expect to take our guests from the best classes of laboring men and single men with trades."

#### Duplex Forging Press.

Beaudry & Co. of 70 Kilby street, Boston, have just brought out a special press, intended for heavy forging, which is illustrated in the accompanying engraving. The machine is noticeable for its great strength and for the comprehensiveness of the plungers' stroke—that is, the stroke of the plungers can be easily and readily varied from 0 to  $4\frac{1}{2}$  inches, the machine in the mean time being in full operation, so far as the main shaft is concerned. In common with the smaller presses built by the same firm, it consists of two plungers on one crank shaft, so constructed that they may be run independently or together. By a patented "step clutch," the throw of the plungers can be varied at the will of the operator,

An important item is the fact that this machine gives a powerful but steady pressure instead of heavy jarring blows, and thus cast-iron dies may be used in the great majority of cases, a saving in the cost of producing thus being possible. Another point is that several dies may be used at once, thus avoiding the usual delay required for changing, and frequently enabling the operator to finish a piece of work requiring a number of dies at one heat, and without moving from his place. All dies are adjusted by means of set screws rather than keys, consequently reducing time required for setting to a minimum. By means of a patent safety attachment, the machine is stopped automatically in case of the accidental introduction of too heavy work, thereby avoiding breaking or damage of any kind. Should this device be called into use, it needs but the tightening of a nut to put the machine in running order again. The machine occupies a floor space of only 7 x 3 feet and weighs 30,000 pounds. While it is particularly intended for forging, it can do shearing up to 48 inches wide by  $1\frac{1}{2}$  inches thick, in two strokes, 24 inches at each stroke, by shifting the plate laterally.

It can do punching in plates up to 53 inches in diameter,  $1\frac{1}{4}$  inches thick, with dies ranging up to 8 inches in diameter, which can be set to strike at any point.

### The Canet Gun Carriage.

In our issue of July 9 we described and illustrated the Armond turret invented by J. B. G. A. Canet of Paris, and one-half of which was assigned to Sir Joseph Whitworth & Co., Limited, of Openshaw, England. We now describe and illustrate a gun carriage originating from the same

or segemental rails A' B. The chassis is connected by a strong bolt, F, to a pivot, link, G, upon which is formed an eye, G', for the pivot pin, and also a clip, G<sup>2</sup>, which engages with a projection on the base plate, and prevents the tilting of the frame. The training or traversing of the gun is effected by turning the frame or under carriage upon the pivot H by means described below.

The mechanism for effecting the housing of the gun and mounting so as to bring the gun entirely to the rear or inside of the wall or parapet comprises a strong screw shaft, J, working in two nuts K L.

front with a pair of rollers or trucks, O, which rest upon straight rails secured to the deck or firing platform. The traversing rollers at the rear of the mounting are carried by pivoted blocks Q, so that by turning the blocks through an angle of about 90° the rollers or trucks E can be adapted to run upon the ways P. Each block Q is provided with a pivot pin, Q', which extends upward through a bearing on the frame or under carriage C, and which has fixed upon it a collar, Q<sup>2</sup>, Fig. 3, having a projecting arm, Q<sup>3</sup>, whereby the block may be turned for the purpose above mentioned. Each block is, moreover,

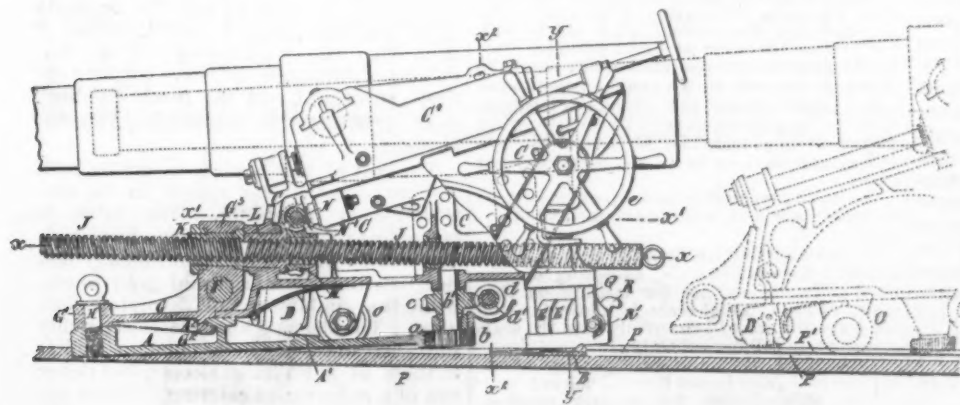


Fig. 1.—Side Elevation.

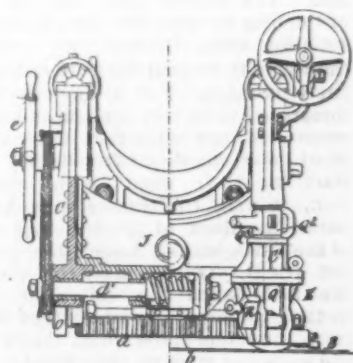


Fig. 3.—Rear Elevation.

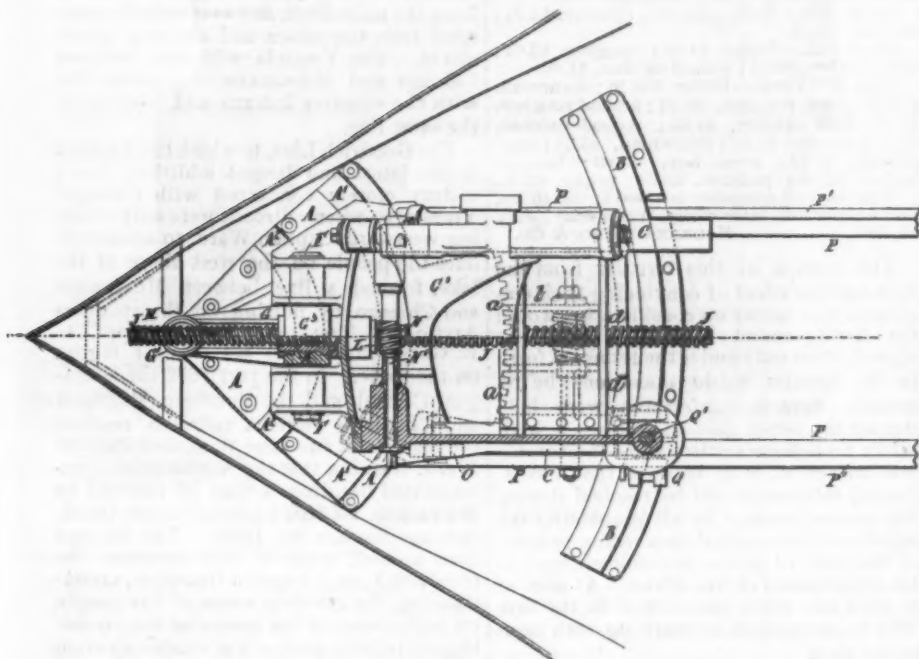


Fig. 2.—Plan.

### THE CANET GUN CARRIAGE.

source. These subjects are now of vast interest, because of the attention they are attracting in Europe and because of what is being done in the same line in this country. The present invention comprises means for housing the gun and its mounting entirely behind or inside of the armor, so that the gun port or opening can be closed; means are also provided for readily running out or returning the gun and mounting to the firing position.

In the accompanying drawings A is a strong base plate, to which is attached a segmental rail, A'. Another rail or roller path B is also rigidly secured to the platform. The chassis or frame C rests by means of rollers D and E upon the circular

The nut K is firmly secured in a bracket firmly attached to the pivot link G, and the nut L is firmly secured in the frame or under carriage C. The screw shaft J has a right and left hand screw thread, the nuts K L being correspondingly screw threaded. Upon the screw shaft J is mounted a worm wheel, M, provided with a key which is fitted to slide in a longitudinal groove or keyway formed in the screw shaft and extending to the rear end. This worm wheel is geared with an endless screw, N, the shaft N' of which is provided at its extremities with suitable driving cranks or handles.

To facilitate the backward movement of the under carriage C, it is provided in

provided with a hook or clip, R, pivoted at R' to the block. These hooks or clips may be turned down so that they will engage with the flanges P' of the rails P, and will guide or hold down the rear of the frame C in its backward movement, or they can be turned up so that they are clear of the rails. To provide for retaining the hook or clip R at either extremity of its movement, two holes are formed in the block Q and a pin is passed through a hole in the hook or catch R and into one or the other of these holes.

The running in or housing of the gun and mounting is effected as follows: Assuming the gun to be in the firing position on the mounting, the frame or under carriage is so adjusted upon the rails A' B and the blocks Q, carrying the rollers or trucks E, are so turned that the said rollers or trucks may run upon the straight rails or ways P, the hooks R being turned down so that they engage with the flanges P' of the rails or ways P. The gun and the top carriage C\* are then run back by any convenient means to their rearmost position upon the chassis or under carriage C, as indicated by dotted lines in Fig. 1, and are held in this position by means of locking bolts. The bolt F, which connects the frame or under carriage C with the pivot link G, is withdrawn, and the cranks or handles, which actuate the screw shaft J through the medium of the worm N and worm wheel M, are turned in the proper direction to move the frame or under carriage backward along the straight rails P upon the rollers or trucks O E.

The screw shaft J is made of such length that when it has moved the frame or under carriage to the rear extremity of its course, as indicated by dotted lines in Fig. 1, the gun is brought completely within the armor or behind the wall or parapet. It can be maintained in this position, if necessary, by means of tension screws or other securing gear and the gun port can be closed. The return of the gun and carriage or mounting to the firing position is effected by reversing the above-described operations. For training or traversing the gun and mounting, a toothed segment, a, is formed on or attached to the base



plate A, and has geared with it a pinion, *b*, fixed on a vertical shaft, *b'*, on which is also fixed a worm wheel, *c*. This worm wheel is geared with a worm, *d*, fixed on a shaft, *d'*, arranged to be driven by chain gearing actuated by means of the hand wheel *e*; or the training of the gun may be effected by means of other suitable gearing.

### The Plate-Mill Scale.

Mention has been made in these columns before of the fact that there was trouble between Moorhead, Bro. & Co., proprietors of the Vesuvius Iron and Nail Works, at Pittsburgh, and their employees, particularly those employed in the plate mill. The trouble arose over the refusal of the firm to sign the Amalgamated Association scale, because they considered the wages to be paid the plate-mill men entirely too high. For a time the trouble threatened to be very serious, and the firm announced last week that unless a settlement was speedily effected they would start up their plant with non-union men. Several conferences were held between members of the firm and officials of the Amalgamated Association, but without result. On Monday, the 27th ult., the firm issued the following address to their employees, in which they fully set forth the terms under which they will sign the scale and start up their plant:

From the conversations we have had with several of our prominent workmen, we have concluded that it is almost a waste of time to even try to arrive at a more equitable scale to govern our plate mill during the coming year. We are aware of numerous special scales, and special agreements, allowed different mills by the Amalgamated Association, and thought that we should certainly be treated in a similar manner. We have been, however, so confidently assured that such a favor is not for us that we have about determined to make our mill a non-union one.

Before doing so, we herewith desire to put a few plain facts before you, believing that all honest-thinking men must agree that our position, to say the least, is most fair.

We have no grievance against the Amalgamated Association save their scale of wages on the plate and tank mill. This scale being properly adjusted, we would almost prefer signing the Amalgamated Association scale. But with the wages now in vogue in this mill, it is impossible that we continue at work. We herewith submit a table of wages, showing the exact amounts received during the past year by the highest-paid men at the different trades in the Vesuvius mill. A mere glance at this must show any fair man at all conversant with the skill and labor required at each that there is simply no equity, reason or justice in the present plate-mill scale.

The plate-mill scale was made when the output of a mill was, say, 10 tons a turn, and the wages were possibly fair, considering the crude advantages of the time, and the small output; besides this, the price obtained by the manufacturer was some 3 to 5 cents a pound. To-day, however, the output of a good mill, owing to improved machinery, &c., is, say, 30 to 45 tons per turn, and this increased tonnage turned out with little or no extra labor, and in about the same time as ten some years ago.

A much stronger argument, also, is this: Plate iron is to-day sold at 1.80 cents per pound—think of it, \$36 a ton, and, worse than that, \$36 per ton delivered, which means, say, \$34.50 per ton net to us. Can you figure any profit out of that? Why, it is only a decent price for common bar iron.

The position of roller on the plate mill was paid last year \$10.204.22. Think of it! Why, gentlemen, that was more by quite a bit than the firm made on this mill, with all expenses, breaks, risks and losses. Think of it, one position on a mill yielding more than the firm makes. Why, is it not almost time for the firm to take the roller's job and give him the mill.

The roller on our plate mill made, as can be seen from the tables below, over three times as much as made by the roller on the nail mill, over three times as much as made by the roller on the bar mill, six times as much as the muck roller, and almost seven times as much as made by the best puddlers in our mill. Look also at the plate-mill hands, roughers, catchers and all, and you will readily see that these same outrageous differences between plate-mill and groove-mill prices occur right through the list; and for material that sells for about

the same price in the market. Do these men work longer? Does their work take a better class of men? Is the work as disagreeable as on the small mills? Or are they men of greater brains and filling positions that require a more intelligent class of men? I think you must admit that we have just as intelligent men at the puddling furnaces and at the other mills, and must agree that the plate-mill crew is certainly receiving wages out of all reason if the balance of the mills have proper scales.

We hope that you will give this notice proper consideration, as it is not made as a bluff, but as an honest statement of just how affairs are. Some may now possibly say, "The other mills are satisfied with the scale, why cannot you pay it?" To this we simply state that while they are as unsatisfied as we are, they make something else besides common iron, and when they don't make money on common stuff they have other grades that help them through. We have no fight against the Amalgamated Association, and would be willing to sign the scale at once, provided they would make us a proper plate-mill scale. We prefer peace, but as we cannot pay present prices, and as we intend to remain in business, if our old employees do not wish to help us out they must stand aside and let others, who are willing and anxious to do so, take their old places.

We stand prepared to back up all assertions we have made here, with our books and otherwise.

We ask no reduction from the regular Amalgamated Association scale, excepting on the plate-mill scale, and not for heating on that scale, and if a special scale is allowed us on the plate mill we will cheerfully sign the scale and start up full immediately.

Table of relative wages paid per day on our various mills, also to puddler and helper:

Plate Mill.—Roller, \$24.88; first rougher, \$8.83; second rougher, \$6.21; first catcher, \$7.03; second catcher, \$5.51.

Nail Mill.—Roller, \$7.73; rougher, \$3.78; first catcher, \$4.73; second catcher, \$3.15.

Bar Mill.—Roller, \$7.59; rougher, \$4.22; first catcher, \$5.27; second catcher, \$3.51.

Guide Mill.—Roller, \$10.88; rougher, \$4.04; catcher, \$4.04.

Muck Mill.—Roller, \$4.39; rougher, \$2.61; first catcher, \$2.51; second catcher, \$1.92.

Plate Mill Crew.—Roller \$24.88; shearman, \$10.35; first rougher, \$8.83; second rougher, \$6.21; first catcher, \$7.03; second catcher, \$5.51; hoister, \$5.51; screwman, \$5.51; bug-gyman, \$4.14; scrap boy, \$3.03; heater's helper, \$2.84; puddler, \$3.62; helper, \$2.50.

Your careful attention is asked to the above, and a reply not later than Wednesday, July 29, 1891.

MOORHEAD, BRO. & CO.

The receipt of this circular from the firm had the effect of convincing their employees that under no consideration would the Amalgamated Association scale be signed; that only under the terms set forth in the circular would operations be resumed. Several conferences were held during the latter part of last week, and, while no definite settlement of the trouble was arrived at, it is believed that a satisfactory settlement will be reached during the present week. In all probability the trouble will be settled by a rearrangement of the scale of prices governing wages in all departments of the works. At present it does not seem probable that the firm will be compelled to start up with non-union men.

### Lake Michigan's Pride.

The new Goodrich Line steamer Virginia which arrived at Chicago on the 13th inst. on its first trip, is pronounced a model of beauty, and in furnishings and appointments probably not equaled by any vessel on inland water. It is a steel boat and was built in Cleveland. It is 278 feet over all, 38 feet beam and 25 feet deep, and measures 2500 tons. Its engines are twin sets of triple-expansion cylinders, now for the first time introduced on the Goodrich Line, and cannot fail in giving the boat great speed, as the lines of its hull are exquisitely modeled both for speed and ease in a seaway.

It has water-tight bulkheads and a water bottom, and is furnished with 800 incandescent lights, which are supplied by two dynamos run by separate machinery. The machinery is said to be the most powerful on the lakes, and the steam is supplied by

four Scotch boilers each 12 x 14 feet. The engines are of the ocean type and expected to develop 3000 horse-power. Its guaranteed average speed is 18 miles an hour, and its captain thinks it can readily make 23 if its engines are pushed to their full capacity. The Virginia is patterned after that ocean flyer, the City of New York, and in all things but dimensions is its counterpart, and promises to become the greyhound of the lakes. All the skill of the marine architects of the Globe Iron Works at Cleveland, builders of the Virginia, was exerted to do away with the pulsation throughout the ship caused by the movement of the wheels when going at high speed. Every piece of iron and steel placed in its decks and the supports of the hull was planned with the view of decreasing the "throbbing" of the machinery. Although they have not been entirely successful, yet the result has been most satisfactory in minimizing this annoyance.

The cost of the boat is over \$300,000, and no expense was spared in its construction or fitting up. The cabin is magnificently and massively furnished. The woodwork is polished mahogany and the furniture is in rich old gold plush, while the windows are of decorated plate glass. The sleeping apartments are richly furnished and hung with curtains similar to those of a Pullman sleeper, but richer and of a more varied coloring. There are several large staterooms, and about 400 passengers can be accommodated with luxurious berths. The dining room is placed in the forward hold space and is reached by a broad mahogany stairway from the main deck, and so is entirely separated from the saloon and sleeping apartments. The Virginia will run between Chicago and Milwaukee in conjunction with the steamers Indiana and Chicago of the same line.

The Goodrich Line, to which the Virginia is the latest and largest addition, has a history closely connected with Chicago. Years ago, when railroads were only creeping westward, Captain Ward, to accommodate the people on the west shore of the lake, formed a line between Milwaukee and Chicago by putting on the steamers Arctic and Traveler. The late Capt. A. E. Goodrich had also his steamer Huron on the route. In the year 1852 the Michigan Central and the Southern Michigan and Northern Indiana railroads reached Chicago about the same time, and Captain Ward, learning that the Northwestern contemplated building a line of railroad to Milwaukee, sold his boats to Captain Goodrich and the late Mr. Drew. The line was then named, what it still remains, the Goodrich Line. Captain Goodrich, understanding the growing wants of the people on both shores of the lake, and the advantage of reliable methods of communication with Chicago, placed a boat on the Grand Haven route, touching at Manistee, and another on the Green Bay route. The side-wheel steamers Chicago and Sheboygan formed the Milwaukee line.

After a successful management of over 30 years Captain Goodrich died, and the company unanimously elected his son, A. W. Goodrich, to the presidency. His education, improved by travel, and his practical experience under his father's supervision taught him to keep a weather eye open in regard to the character and style of boat best adapted to the wants and requirements of the Goodrich Line, at the same time paying due attention to the comfort and tastes of its patrons. Quietly he set to work and built the steamer Racine, whose cabin was pronounced a model of excellence and good taste. This he followed up with the Indiana in 1890, an improvement on the Racine in both speed and finish, and now he has brought out what may be considered the perfection of steamers, the Virginia.



In these successive and progressive steps the Goodrich Company show a due appreciation of the public patronage they are receiving, and they have in contemplation the building of a mate to the Virginia, which may be in commission next season.

**Making Chain Links.**

It has been usual, in the manufacture of chain links, to employ a pair of dies the bottom one of which is provided with

groove and so that both sides shall be subjected alternately to the stroke of the moving die. As the dies are so constructed that one end is closed, the end next to the workman at which the links are introduced being open, the part of the chain already formed is drawn out toward the workman, and in order to turn the link it is necessary also to turn with it a considerable part of the welded chain. The heat of the chain and its weight often make this work arduous,

It is the object of an invention recently patented by J. H. Baker, and assigned to the Baker Chain and Wagon Iron Mfg. Company of Allegheny, Pa., to overcome these objections and to cheapen and improve the welding of the links.

In the drawings 2 is the upper die and 3 is the lower. The lower is formed with a cavity, *b*<sup>2</sup>, having at its base a central rest groove, *b*, and two welding grooves, *c c'*, situated at a higher level and parallel to each other, and so related in distance to the rest

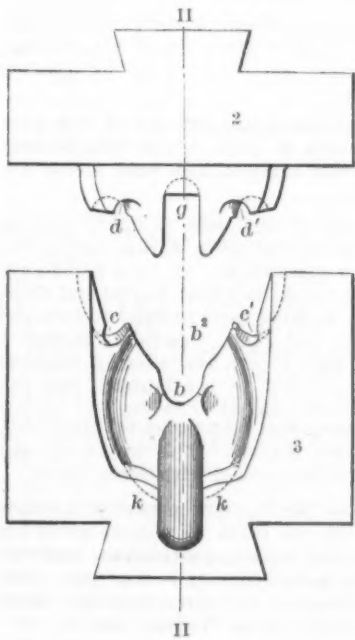


Fig. 1.—Rear Elevation of Dies.

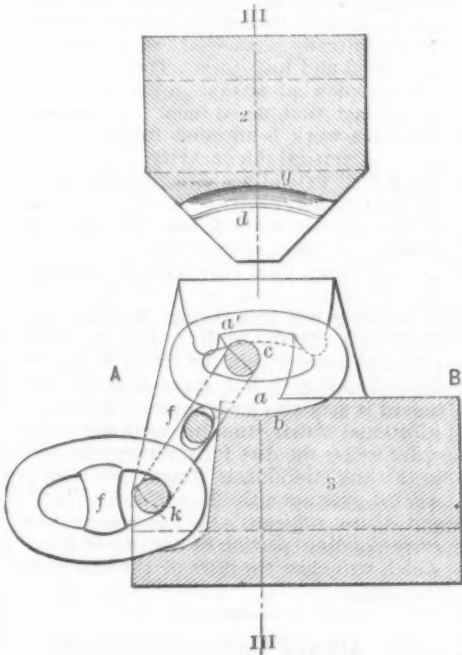


Fig. 2.—Vertical Longitudinal Section on Line II II of Fig. 1.

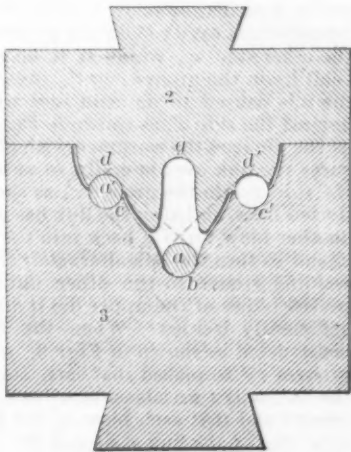


Fig. 3.—Vertical Cross Section on Line III III of Fig. 2.

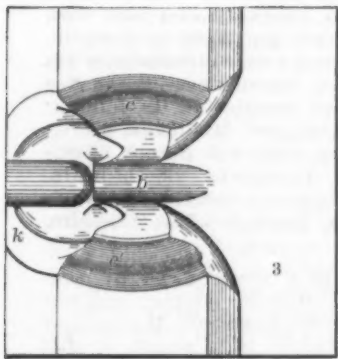


Fig. 4.—Plan View of Bottom of Die.

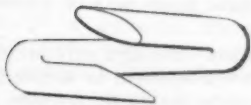


Fig. 5.—Link Ready for Welding.

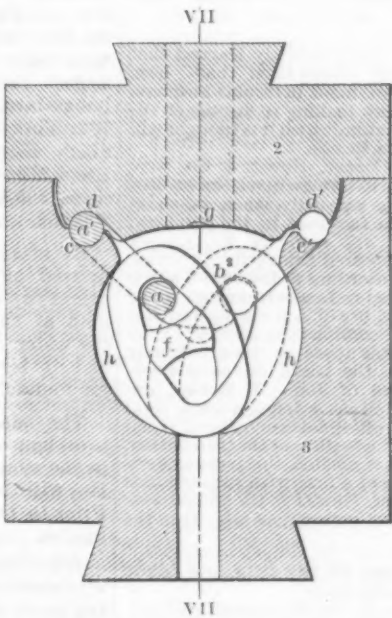


Fig. 6.—Vertical Cross Section of Dies of Modified Form.

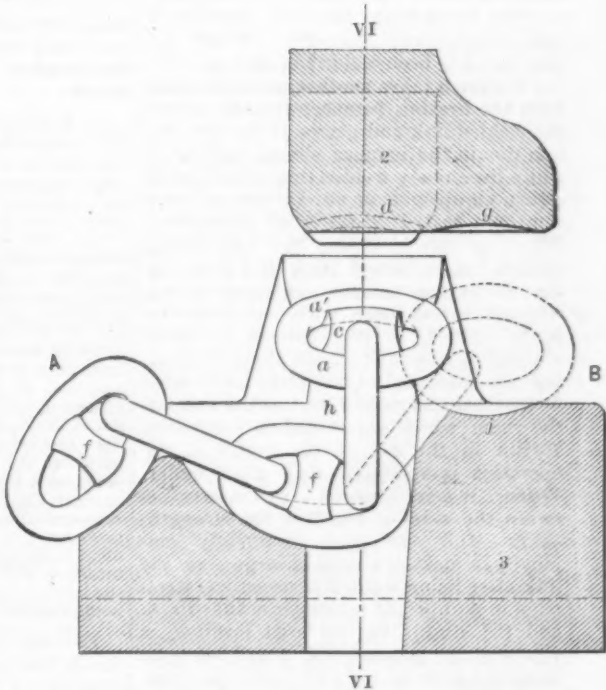


Fig. 7.—Vertical Longitudinal Section on Line VII VII of Fig. 6.

**MAKING CHAIN LINKS.**

a face having a U-shaped groove adapted to receive the end portion of the link to be welded, the moving die being a substantial counterpart of the other. Each link is welded separately, an open or unwelded link being heated, threaded in the link just welded, then placed on the bottom die and welded, and after each stroke of the hammer it is necessary to turn the link over on the die, so that the reverse side of its end portion shall rest in the

consume considerable time, and consequently add materially to the cost of manufacture. This method provides for the manufacture of end-welded links only, whereas links welded at the side are stronger and better. Another objection is that the moving die, on engaging the lower die, receives a forward impulse which cannot be restrained perfectly and misshapes and weakens the metal more or less at the place of welding.

groove that when one side, *a*, of the link is in the intermediate cavity *b*<sup>2</sup> the other side, *a'*, may lie in one of the welding grooves, as shown in Figs. 2 and 3. By turning the link as indicated by the dotted lines in Fig. 3 the side *a'* may be brought into the welding groove *c'*, and may be turned freely back and forth from one welding groove to the other. In the drawings the grooves *c c'* are shown separated from each other a distance equal to

about 90° of the arc of a circle whose radius is a line connecting the groove *b* with one of the grooves *c c'*, this having been found to be the most desirable construction. The moving die 2 is preferably of the form shown in Figs. 1, 2 and 3, having grooved portions *d d'*, adapted to register with the grooves *c c'*, as shown in Fig. 3, and it may have portions adapted to engage the lower die and to act as stops. The form of this die may be modified in various ways.

In using the dies the workman first takes an open chain link having its ends suitably scarfed, as shown in Fig. 5, heats the link at the scarfed ends, then gives it a blow either with the die or with a hammer, so as to bring the scarfed ends together, and having laid the link in the die, as shown in Fig. 3, so that one side, *a*, shall lie in the intermediate cavity *b* on the groove *b* and the other side, *a'*, which is to be welded, shall lie in the groove *c* or *c'*, the moving die 2 is caused to descend and to strike against the side *a'*, as shown in Fig. 3, and as the die rises the workman with his tongs turns the link over laterally, so as to bring the side *a'* into the groove *c'*, as shown by dotted lines, and after the link has received another blow turns it back into the groove *c*, and so turn the link alternately from one welding groove to the other until by repeated blows of the upper die it has been sufficiently welded. When the dies are constructed as shown in Fig. 3, with the grooves *c c'* so placed that each turning of the link will turn its side *a'* one quarter around and that each blow of the hammer is exerted on the link at a point 90° from the point of the last blow before, the consequence is that the tendency which each blow has for flattening out the metal is neutralized by the next blow, and a link of symmetrical form is preserved. It is in this respect that this form of die is superior to the die in which the grooves *c c'* are so situated that in shifting the link laterally it shall turn more than 90°. When the first link has been welded in this manner, the workman takes another unwelded link from the heating furnace, threads it into the welded link and places it on the bottom die in the manner shown in Fig. 2, while the already welded link is suffered to rest in an upright or nearly upright position on a seat, *k*, at the front of that die. When in this position, the link being welded can be turned back and forth on the die in the manner explained above, without interference with the links already welded, so that instead of being obliged to move the whole chain in turning the link only the link itself need be handled and moved, and as the links of the chain which are welded in succession are not in the way of the workman, the operation is rendered very much easier. When it is desired to insert between the sides of the link the strengthening stud or post commonly employed in making chains of large size, the link after being welded is set on its lateral edge in an upright position on the die 3, and the stud *f* having been inserted, a stroke of the hammer die 2 will serve to close the sides of the link upon the stud. For this purpose in the hammer die is formed a cavity, *g*, the base of which forms the striking surface. The same means may be employed when, instead of inserting a stud in the link, it is desired to force the sides of the link together for the purpose of shaping it by reducing its width.

In Figs. 6 and 7 is shown a bottom-die of modified form. This die embodies the same general principles of construction and mode of use as the dies shown in Figs. 1, 2, 3 and 4, while it illustrates some of the various changes which may be made in the die by the skilled mechanic. In Fig. 6, instead of employing a central groove, *b*, in which the side *a* of the link rests, and locating the grooves *c c'* so that they

shall be 90° apart on a circle whose center corresponds to the groove *b*, the latter groove is omitted altogether, and the cavity *b* of the die, in which the side *a* of the link rests, may be without bottom support, but its sides are preferably inclined, so as to support the link laterally in proper position. The hammer die corresponds in shape to the altered shape of the lower die. In welding the link the operation is the same as already described, except that in shifting it from one welding groove to the other the link is supported by the tongs of the workman and is not only turned one-quarter, but is shifted laterally somewhat, as shown by the dotted and full lines. This construction is somewhat advantageous in respect of the fact that more room for manipulating the work is afforded to the workman. A vertical slot or cavity, *h*, is formed in the die, extending downwardly from the intermediate cavity *b*, for the reception of the link last welded, which during the welding of the next stands upright, while the preceding link may extend horizontally therefrom, as shown in the drawings. In shifting the link being welded from one side of the die to the other the next link also turns within the cavity *h*, as indicated in Fig. 6, but its action in this regard is very easy and causes no materially additional labor to the workman. In order to use the dies for inserting the stud in the link, the link is drawn after it is welded over upon the die surface *j*, Fig. 7, and there subjected to the action of a corresponding portion of the moving die, which will close the sides of the link upon the stud.

#### The Alleged Cooper-Hewitt Sale.

A few days since the New York *World* printed a long statement announcing that Cooper, Hewitt & Co. were about to turn their interests over to a stock company, and that the shares were to be floated in the English market. The report continues:

On Saturday it was definitely learned that the Cooper-Hewitt corporation had been launched in London under favorable auspices, and that efforts were making to dispose of the shares upon a valuation which it is thought will make the venture a success.

The fact that Cooper, Hewitt & Co. were trying to sell out to foreign investors excited no little comment, especially when taken in connection with the fact that in the published prospectus neither the name of Mr. Cooper nor Mr. Hewitt appeared among the directors.

The directory, according to the names which have been published in London, seemed to be made up of a mixture of Americans and Englishmen, and the combination from the Wall street standpoint has appeared strong. Among the Americans on the board of the new corporation the name of John W. Mackay appears with that of Senator Jones, while several of their English colleagues are men of equal responsibility. The feature of the transaction, however, which has excited the greatest comment is the fact that a firm with such big iron interests as Cooper, Hewitt & Co. should seek the foreign investor rather than sell out in the home market.

Edward Cooper of the firm has made the following statement:

We have had nothing to do with getting up any syndicate, foreign or American, to buy our iron works. Some time since a responsible American capitalist asked us if we would sell part of our business, and we named a price which we would be willing to take. Everything has its price. But no contract has been entered into and nothing has come of it.

We understand that the capitalist referred to was ex-Senator Jones. We are informed that under English methods it is quite possible that a company has been formed to acquire the property, if the money asked can be raised, without the possession of a formal option or contract of sale. At the time when Senator Jones approached Cooper, Hewitt & Co. he also secured an option on another large New Jersey mill, but did not avail himself of it.

## THE WEEK.

President Warner Miller of the Nicaragua Canal Construction Company says he has secured money enough to carry the work along for two years, without making further financial arrangements.

The American Minister at Bogota, Mr. Abbott, recently forwarded to Washington an official report on the "Industrial Possibilities of Colombia," from which American manufacturers and capitalists can obtain much information.

A cargo consisting largely of wrought-iron boiler tubes from the North of England arrived at this port by the steamer *Noramic*.

The custom-house officers at this port have seized a half dozen false-bottom trunks this summer and been richly rewarded.

The city of St. Louis aspires to become known as a great grain market and center of the export trade. A local paper says the banks and the wheat buyers and shippers are working hand in hand to turn the trade to that city, especially the export trade. The buyers are offering the best figures possible to the farmers, and the banks are holding their money and giving the buyers the best terms in furnishing them with money. The banks are unusually well supplied with ready funds.

Armour the Western packer will establish a special plant to prepare goods for the German market, provided the embargo on pork in that country is removed. One account says he will run special steel ships to Germany via the Welland Canal.

A member of an irrigation company in Deming, N. M., says that all of the great desert in that region, down as far as Old Mexico, will be reclaimed for agriculture.

This year the population of London has increased in a somewhat lower ratio than that of England and Wales as a whole, the first time that such a circumstance has occurred. The populations of the ten largest English counties are as follows: Lancashire, 3,926,798; Middlesex, 3,251,703; Yorkshire, 3,208,813; Surrey, 1,730,871; Kent, 1,142,281; Staffordshire, 1,083,273; Durham, 1,016,449; Warwickshire, 805,070; Essex, 785,399; Cheshire, 730,052.

By means of a powerful jet of compressed air a German military engineer drives dry cement down into the sand or mud at the bottom of a stream, so that the water immediately fixes the cement, and it becomes like solid rock, suitable for foundations.

The election of Claudio Vicuna as president of Chili should make a new turn in the affairs of that unfortunate country. He will be inaugurated in September. Prior to that date there may be decisive battles.

John Englis, the Brooklyn shipbuilder, says that our encouragement to shipbuilding is not enough to enable shipowners to run their vessels to Europe, for the reason that we pay our captains and seamen double what the English, French and Germans do. "My opinion," says he, "is that if you give an American a vessel he could not run her at a profit. Coal and everything else cost more here than in Europe."

A Boston paper says the leading manufacturers of harvesting machines have decided to discontinue advertising at State and county fairs, and will not furnish any machines to their New England agents for exhibition purposes.

Producers of natural gas in Pittsburgh inform their customers that there will be no lack of fuel the coming winter. One



of the principal producers is putting down 32 new wells. But prices may be advanced.

The Chesapeake and Ohio Canal has been reopened after a suspension of two years, and boats will commence running about the 15th, principally loaded with coal.

All kinds of cereals in Guatemala are at famine prices.

Minister Eagan's espousal of the cause of Balmaceda in Chili, thereby involving relations with the United States Government, is severely criticised at Washington.

British trade with Brazil is improving, whatever may be said of trade with the United States. Importers of British cotton goods have nearly doubled and imports of machinery and railroad materials are a third larger, compared with last year. These two items, for the first four months of 1891, amount to about \$10,500,000.

The town of Everett, Mass., has a population of 12,500, having doubled within six years, and will soon apply to the legislature for a city charter. It lately formed a part of Malden.

Iowa firms engaged in shipping grain and cattle claim over \$1,000,000 from Western railroads in the shape of rebates, that amount having been paid on account of illegal discrimination.

Lake vessels readily get employed in carrying iron ore, as manufacturers are now calling for large amounts, probably to anticipate higher rates of freight when the grain movement acquires full volume.

Great predictions are made for Texas as a wheat State. The first cargo of 90,000 bushels has just sailed from Galveston, and 12,000 carloads are in sight. St. Louis and shippers by the lakes are interested. A correspondent in Galveston says: "The Texas wheat farmer received from 68 cents to 78 cents a bushel for this wheat at the nearest railroad station. That left the middleman his full share. From Wichita Falls, the heart of the Panhandle wheat belt, the freight rate to Galveston was 17½ cents. The grain went into the Galveston elevator at 90 cents to 91 cents when it was selling at 96 cents in New York. It will be delivered in Liverpool at 3 cents more than the ocean rate from New York. Kansas wheat from several points can be put down to-day at the Gulf cheaper than at Chicago, in spite of all the powerful influences for the lake route. The writer mentions eight countries which this year turn out 5,000,000 bushels of wheat, the average yield being 20 bushels to the acre. The return, therefore, was \$15 an acre for a crop as easily grown as wheat, on land which cost from \$2.50 to \$5 an acre. Four years ago there were not 1000 acres in grain in these eight countries. They will also market 2,500,000 bushels of oats and 1,500,000 bushels of corn."

The assessable property of Brooklyn is \$3,735,000 less than last year, a decrease of over 17 per cent. This is due in large part to a decision of the Court of Appeals, requiring the assessment of the stock of corporations at its "known or ascertained value."

M. Eiffel and a number of capitalists have offered to support Janssen's project for the erection of an observatory on the summit of Mont Blanc.

Depression in the building trades in Philadelphia has thrown thousands out of employment, causing much destitution. Fortunes were spent in erecting small dwellings and soon the supply more than equaled the demand. A heavy decline in the value of real estate was threatened, and the

trust companies in order decided to advance no more money. The builders were thus compelled to suspend operations, with the effects noted.

The New York Board of Trade and Transportation have completed the form of invitation to commercial bodies to join the State Board of Trade. It is proposed to band together in a State Board of Trade the 137 boards of trade, chambers of commerce and similar business associations in the same manner as has been successfully carried out in Maine, Massachusetts, Pennsylvania and California. It is believed that these associations collectively can exercise a greater influence in matters of legislation affecting their interests than they can individually.

Salvador's war with Guatemala cost \$2,000,000. She now wants a loan of \$8,000,000.

The nitrate mines at Pisagua are being worked to their full capacity.

The paper makers in convention at Saratoga passed strong resolutions opposing free silver coinage.

The new works for the puddling department of the Oil Well Supply Company, in Pittsburgh, fell into ruins, killing several workmen. It is generally believed that the fall of a smokestack caused the entire wreck. Five smokestacks, all in a line, were up. Each stack was of heavy iron, lined with brick and weighed 20 tons or thereabouts. The workmen were changing a guy rope holding the northernmost stack when the whole went down.

Floods in India and drought in Russia will help American wheat growers to reduce their farm mortgages.

The strike against the Pennsylvania Steel Company, at Steelton, was a mistake. President Weihe of the Amalgamated Association says it was made contrary to the decision of the National Association and District Board. An earlier announcement of the fact would have averted much trouble.

A cyclone at Williamsport, Pa., threw a great iron-bridge span into the river.

Ocean freights at New York show little increased firmness, but large steamships are looking to our shores for tonnage. Charters are being made in a lively manner for shipments for August and September, and for wheat alone.

The progress of the Manhattan Railway on the west side of this city is not restrained by orders from the local authorities. The iron string pieces and framework are in position throughout the entire distance, from Seventy-sixth street to 125th street, and the cross ties are down and the rails laid over the greater part.

The taxable valuation of Newark, N. J., increased \$6,000,000 over that of last year, and is now \$117,000,000.

The Boston Rapid Transit Commissioners, accompanied by their engineer, Geo. S. Rice, will visit London, Berlin and Hamburg.

For the first time in the nation's history the native Hawaiians are outnumbered by all others combined. They decrease at the rate of about 1 per cent. a year. The Hawaiians own about \$8,000,000 of property, the whites and other foreigners about \$30,000,000, and the latter are mainly the producers of wealth.

The Western grain traffic via New Orleans is larger than ever before. Apparently with the object of strengthening the movement, the Illinois Central Railroad, according to an agent of that company, will expend nearly \$1,000,000 this year in improvements south of the Ohio

River. He says there is no reason why the wheat and corn from very near the dividing line between Kansas and Nebraska and south of it should not be exported through New Orleans as against the points on the Atlantic seaboard, as rates favor New Orleans by 2 or 3 cents a bushel, as against shipping to St. Louis and thence to the Atlantic.

The French squadron "to convey to Russia the friendly sentiments of the Government," arrived at Cronstadt heavily loaded.

A member of one Maine firm that handles 37,000,000 of spruce this season, says: "pulp will be the leading product of Maine for the next ten years."

Arrivals of tonnage at Quebec this year are diminished to the extent of more than 100,000 tons, including thirty steamships, compared with last year. New York probably takes the trade. A steamship captain, speaking of the decline in the shipping trade of Quebec, said that the cost of labor was in itself sufficient to drive trade away from the port.

A prominent Western freight agent formally gives notice to consumers of coal that a car famine later in the season is probable on account of the demands for grain transportation and that dealers should provide for the emergency.

The shipcarpenters' strike for eight-hours at lake ports has broken, after a serious interruption of business for four months. The men resume their old places.

About 40 carloads of machinery and supplies from Chicago are in course of delivery at the Blane switch near Pittsburgh for the new works of the safe and lock company, nearly completed at that place.

Western cities report extraordinary sales of agricultural machinery, a demand having been stimulated by immense crops. This is pronounced the best year in the history of the trade. The specialties are reapers, mowers and binders.

The authorities at Ottawa are complacent over the latest returns of the foreign trade of Canada, exports having increased over \$1,000,000 during the fiscal year ended June 30, and it is argued that home manufacturers are more and more getting control of the home market. The statement of exports for the fiscal year is as follows: 1890-'91, \$95,566,504; 1889-'90, \$94,389,945; increase, \$1,185,659. The import figures are:

	Imports.	Duty collected.
1889-'90.....	\$107,969,470	\$22,814,703
1890-'91.....	107,553,706	22,023,685
Decrease.....	\$415,764	\$791,018

President Peligrini of the Argentine Republic replies to the Chamber of Commerce, showing that the government has done its utmost to relieve the finances of the country from its desperate condition, and that the new harvests promise the desired relief. He says: "Commerce almost paralyzed suffers from an enormously diminished importation, possibly not over \$55,000,000 this year. The service of indebtedness suspended, the cedula tax almost suppressed, the dividends of foreign companies greatly reduced—not paying this year more than \$70,000,000 or \$80,000,000. If nothing extraordinary occurs, if the present year is simply a normal one, as it promises to be, we will have in the next six or eight months the value of \$130,000,000 to \$140,000,000 in products to export. Far from being obscure, our immediate future is clearing. Without being over optimistic, it can be affirmed that the danger will soon begin to diminish, and that the general discontent and want of confidence are ill-founded."



# The Iron Age

New York, Thursday, August 6, 1891.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.  
CHAS. KIRCHHOFF, - - - EDITOR.  
GEO. W. COPE, - - - ASSOCIATE EDITOR, CHICAGO.  
RICHARD R. WILLIAMS - - - HARDWARE EDITOR.  
JOHN S. KING, - - - BUSINESS MANAGER.

## The Middle-Man in Trade.

The statement will not be disputed that in marketing the great bulk of manufactured products the producer to-day deals directly with the consumer. Exceptions will be found in the case of food products and articles intended for personal use, or for domestic purposes, but even here the producer is brought closer to the consumer than was once the case, as sales are made largely from the factory to the retail store. The middle-man, whether he be a jobber, a broker or a commission merchant, has been overshadowed and shorn of his importance by the multiplication of factories and their distribution over a much wider area. It is easy and perhaps natural to deduce the broad inference that the tendency in trade is to the gradual extinction of middle-men. This idea is encouraged to a great extent by the huge growth of direct trading, and the apparent confinement of the middle-men within certain limits. It is, however, encouraged fully as much by one's own inborn preference or prejudice, which leads him to endeavor to buy from "first hands" whenever possible, and to avoid paying a profit to any others who are merely in the line of distribution. Even the middle-men themselves always seek principals when they desire to make purchases. The complete extinction of the middle-man is the dream of a very large class of people, with whom "the wish is father to the thought."

And yet with the apparently steady progress toward closer relations between producer and consumer, it is unmistakable that middle-men occupy a position of permanence. Better qualifications are of course necessary now than the mere possession of capital and business connections. The business man who to-day ventures to stand between the manufacturer and the retailer and extract a profit from what trade he can divert through his own hands needs to be blessed with a keen insight into methods and processes and channels of trade, as well as the power of foresight with regard to the operation of current commercial influences. There are men in the iron trade to-day who are able to conduct a large business in which they derive profit from merely buying and selling and are neither manufacturers nor distributors. It is sometimes gratuitously assumed by those who buy from them that such middle-men are unnecessary and are in fact a weight on legitimate trade. In one sense they are a weight, but it is in the sense of a balance weight, in which case they are most useful to sellers. Take, for

instance, the dealers in old railway material, who form an important class of middle-men. When the mills are supplied with such stock or hesitate to take in more, the dealers are very useful to the railroads, and will often take risks of an unfavorable turn in the market that a consumer would by no means care to assume. It is possible that this function is not specially agreeable to consumers, but it certainly must be to producers or sellers, who also have a right to be considered as parties to a transaction.

Middle-men make themselves of value in both directions—to manufacturers or producers, as well as to retailers or consumers—and they will never become extinct, even if all manufacturers combined against them to avoid paying commissions on sales, and if all consumers endeavored to go as nearly as they could to "first hands." The bright wits of the born traders who take up the avocation of middle-men will find openings for themselves, and they will extract profits in spite of the unfriendliness of one side or the undisguised hostility of the other.

## Ocean Postal Service.

A hopeful feeling exists among the steam navigation companies with reference to the practical operation of the new Ocean Mail Service act, and sufficient time has elapsed since the issue of proposals by the Postmaster-General for mail lettings to permit the statement, on good evidence, that when bids are due, three months hence, quite a number of strong corporations will signify their readiness to comply with the terms of the law. Inquiries among shipbuilders and iron manufacturers, with reference to the cost of construction and materials required, indicate quite a general disposition to see what it is possible to do. Many careful calculations must be made before heavy responsibilities are assumed, not merely in regard to first cost but respecting the facilities for coaling on long routes, the probable amount of revenue to be realized from all sources, the degree of competition liable to be encountered and the possibility of a material increase of exports and imports as a result of improved steam communication. The stipulation for 18 knots to Brazil presents a difficult problem, so much so that some modification may be found indispensable. The president of the United States and Brazil Steamship Company said: "The daily consumption would be very large, and the freight room would be proportionately small. Homeward coal would have to be bought in South American markets, at South American prices, which are ruinous. For instance, the price for coal in Rio Janeiro last year ranged from \$10.50 to \$11.75 a ton." Touching the same subject, H. K. Thurber, the former president said: "The true policy is not so much increased speed as an increased number of ports of call, and lengthening the required time for a passage so that freight could be sent at the rate of 10½ to 12 knots. Time down there is not the

main consideration. Economy of freight is the prime factor."

One of the largest shipbuilders on the Delaware is of the opinion that but few new steamships of the first and second class will be called for under the new mail contracts, but surmises that not less than six or eight of from 5000 to 8000 tons will be built before many months for the European route and lines to Brazil and China. The small rates of compensation allowed do not permit of great expectations. It is hardly to be supposed that appropriations amounting to \$1,250,000 for the first year of service offer an adequate inducement to American capitalists for the investment of \$20,000,000 or \$30,000,000, which would be necessary to give the improved postal service much real efficiency. Moreover, the permanence of the subsidy system is yet to be assured.

With reference to the intentions of the several steamship companies most directly interested, few have spoken beyond the remark that the proposals from Washington were receiving thoughtful consideration. Manager Hughes of the New York and Cuba Mail Steamship Company said they would build three ships of about 5000 tons for the River Platte trade if they obtained the contract and one more for the Havana service. The Red D Line contemplate building a ship of the third class, but nothing has yet been definitely decided. In regard to the transatlantic route, the American Steamship Company, who practically own and control the Inman fleet, including the superb steamships City of Paris and City of New York, Manager Griscom, now in England, said, as reported by the *Tribune*:—

The company are considering the whole subject; naturally. There are difficulties in the way of making a bid. The maximum pay for the round voyage between New York and England is, at \$4 a mile for 3000 miles, only \$12,000. Against that has to be set the difference between the wages paid in Liverpool and New York, between \$25 a month and \$45, for instance. And then look at the provision in the third section of the act, requiring that during the first two years one fourth of the crews shall be American citizens; during the next three years a third; and afterward a half. How is this to be carried out? Where are the American citizens to be found? And at what wages? The extreme difference of cost between a British-built steamer, adapted under the act for mail service of the first class may be set down as 10 per cent. Probably it would not exceed 5 per cent., all things considered, but call it 10. On this the depreciation, reckoned at one-tenth for each year of the ten, is 10 per cent.; insurance, say, 5 per cent.; interest, 5 per cent.; all together, 20 per cent. Now the City of Paris, City of New York, Majestic and Teutonic are known to have cost their owners a round \$2,000,000 apiece. Ten per cent. on that comes to \$200,000; 20 per cent. of that is \$40,000; one-twelfth of that gives \$3333 as the additional cost per round voyage of owning an American-built steamship of the class of the City of Paris and the Majestic.

Add to the foregoing a round sum in wages for the difference in the extra cost of running an American steamer. Apropos of this subject the Philadelphia *Ledger*, has "good authority" for the statement that the two famous steamers above named each receive from the British Government a sum equal to 3 per cent. per annum

on the entire cost of the ship, the consideration being an obligation to enter the naval service on demand, should an exigency require. The convertibility of the vessels built under the postal bill, so that they may readily respond to naval requirements, is an important feature in the new measure and serves to warrant in large measure any apparent departure from sound principles in favoring a special interest, or class of investors, at the expense of the Government Treasury. Apart from misgivings on this score, which some economists may indulge, it must be conceded that momentous considerations closely related to the extension of American commerce and the upbuilding of the mercantile marine call for vigorous action.

### Economy Rating of Engines and Boilers.

The practice of expressing the economy of a steam engine in so many pounds of coal per horse-power per hour has been almost universal in the past, and although some few engine builders are using a different standard, the former may still be considered the prevailing method. Certainly nothing could be more fallacious than to speak of the consumption of fuel by the engine, which consumes steam only, or should if proper conditions exist. An improved automatic cut-off engine is sold under guarantee of a fuel consumption of, say, 3 pounds of coal per horse-power per hour. How does the maker arrive at this figure, not knowing the economy of the steam generator? With an average boiler performance the quantity of steam supplied to the engine on the above rating will be that due to the evaporation of about 7 pounds of water evaporated per pound, or 21 pounds of water per 3 pounds, from and at 212° F. Therefore the economy of the engine should be rated as 21 pounds of water per horse-power per hour instead of 3 pounds of coal. This is definite and rational, as it eliminates all unknown quantities and rates the engine on a basis which has to do only with the functions performed by and chargeable to it. No engine builder would care to have his work undervalued by charging against it the inefficiency of the boiler. If he knows the boiler from which it is proposed to run his engine to be exceptionally economical he will certainly show a great want of business judgment if he does not reduce his coal rating; for instance, if the boiler gives 10 pounds evaporation and the engine can run on 21 pounds of steam he will hardly care to have it rated at 30 pounds, neither would it be a fact. Again, if the boiler is extravagant and gives but 5 pounds evaporation, it would be an absurdity to say that the engine was running on 15 pounds of steam (or water), as that would indicate just the reverse of existing conditions, and extravagance would be expressed as economy. Every builder of high class engines knows from the indicator cards just how many pounds of steam at normal saturation will be consumed per hour for each horse power developed by his engine, and on this rating

he can give an economy guarantee which is free from all complications, and means neither more nor less than is intended. Why not all builders follow the example of the advanced few?

As to the horse power rating of boilers, as it now stands, it is purely nominal and misleading, for the reason that it does not express facts according to improved practice. If a standard rate of evaporation be adopted, and a standard water consumption by the engine, it then becomes merely a matter of substituting a more perfect for a misleading standard. As 24 pounds of water would be a fair average performance, the boiler power could be expressed in horse-power by dividing its evaporation per hour by this constant, and its economy by dividing the evaporation by the fuel consumed as usual.

### Old Rails and Wrought Scrap.

Probabilities are now strongly in favor of a rapid appreciation in the price of old iron rails in the West. The supply has for some time fluctuated remarkably, changing suddenly from scarcity to comparative abundance, and *vice versa*, so that dealers and consumers have halted between two opinions as to an advance and a decline, until they hardly knew what to do when rails were offered them. While the market has narrowed from year to year with the diminishing volume of old iron rails available for manufacture, there are still a number of mills particularly adapted to their consumption, and in which they will continue to be used, either until the supply is entirely exhausted or prices rise to a prohibitory point. With these mills the price of old rails is an important matter. Old rails, also, to some extent govern the price of other old material, hence an inquiry into their condition is of some interest. Looking back to the experience of former years it will be observed that old iron rails invariably advance in the fall months. They decline in the spring, when railroad companies are repairing tracks and making renewals, but advance with the approach of fall, when railroads are too busy hauling grain and other crops to take up rails. The following table, taken from our Chicago market reports, shows the lowest point touched in each of the past six years, the price in September of each year and the price in December:

Years.	Lowest month.	Sept. price.	Dec. price.
1887.....	August, \$16.50	\$18.00	\$20.00
1886.....	June, 18.50	22.50	24.50
1887.....	June, 22.50	25.50	21.00
1888.....	June, 18.00	25.00	22.50
1889.....	May, 19.50	24.50	26.25
1890.....	May, 22.50	27.00	23.50

In some of the years covered by this table the maximum price of the year was made in September, while in other instances there was a steady advance until December. In not a single year, however, was there a failure to advance by September from the prices which prevailed in the spring. This year, with all the fluctuations in supply, prices have moved within quite a narrow range, keeping close to \$23, seldom being 50 cents below it, but

often from 25 to 50 cents above it. The minimum was touched in May, say \$22.50, and prices now range from \$23 to \$23.50, showing some stiffening but not a marked advance. Unless, however, the experience of previous years is reversed this fall, an upward movement in prices is impending. One important Southwestern road, which has long been a good source of supply, has already notified its patrons that it will have no old rails for sale for some time, as neither men nor cars can now be spared to take up rails or transport them. The movement of the great crop will absorb its entire energies. Other Western roads are subject to the same influences, and the supply of old rails must thus be shortly curtailed.

An advance in the price of old rails means also an advance in the price of wrought scrap, which has latterly been none too plentiful in the West. The consumers of old rails will turn to scrap, the supply of which will be cut down to some extent from the same cause as the supply of old rails. The difference in price between forge scrap and old rails has gradually been growing less for some time, even with a supply of rails available. If, now, old rails should become quite scarce, even though but temporarily, forge scrap would also become dearer. The rolling mills using this class of material evidently need to exercise good judgment in laying in stock for their requirements. They would seem warranted in supplying themselves quickly to cover the period from now until the railroads can again make repairs which will throw much old material on the market. Happily there are but few rolling mills at this day unsupplied with puddling furnaces, so that they can turn for relief to pig iron, which is still very cheap, and thus keep the cost of their raw material within reasonable bounds.

It occasionally happens that fomenters of a strike run foul of the laws and get themselves into trouble thereby. A case of this kind recently occurred in Chicago. Joseph O. Stakely, a conductor, and Dennis McCurdy, a discharged conductor, of the Chicago and Eastern Illinois Railroad Company, undertook to tie up that road because a freight crew was discharged for disobeying orders. They stopped freight traffic for four days by issuing orders to trainmen in which they represented themselves to be a committee of employees. They were arrested on a charge of conspiracy to injure the company's business, and last week were convicted after a hard fought trial. The penalty imposed is rather light, being but \$100 fine each and costs, but the principle has been established that two or three disaffected men cannot block the traffic of a railroad.

It is asserted by those who have had special reason to pay some attention to the matter, that there is a very strong tendency in all parts of the country to incorporate mercantile firms. Until quite recently corporations were a rarity in the mercan-



tile business—almost as much so as simple partnerships have become in manufacturing lines. The iron and hardware trades were among the earliest in which the tendency to incorporate took root in commercial houses. There are now very few lines of trade in which corporations are not found conducting a mercantile business. This is especially the case with houses which have built up a large trade which is in danger of being injured or weakened by the death of one of the partners. The change to a corporation secures perpetuity and also releases the general estate of old members of a firm from liability beyond the stock held by them. The antipathy to corporations, which is the stock in trade of sundry agitators and professed leaders of public sentiment, is exerting no influence whatever in checking their growth, but on the contrary the corporate idea is in this way becoming popularized.

### PERSONAL.

T. W. Hyde of the Bath, Maine, Iron Works left on the steamer Teutonic for England and Prussia on business connected with the electric light plants for the gunboats now building at Bath.

H. C. Frick, the coke and steel manufacturer, lost a child at Cresson last week from the effects of a pin swallowed four years ago.

Prof. W. D. Taylor, who has been engaged in active engineering in this country and Mexico, now fills the chair of engineering in the Louisiana State University.

James Berryman of Philadelphia is now in Europe and will travel in France, Italy and Germany for both pleasure and health. At the same time he will look after his business interests, some of his inventions being manufactured in the different countries and in use. The Berryman Feed Water Heater and Purifier, being popular through its merits, will doubtless make his visit at many places a pleasure.

J. Clark of Naylor & Co., the iron and steel merchants, has gone abroad for a brief trip.

J. P. Meday of A. R. Whitney & Co., New York, was expected home to day on the Antwerp steamer.

Samuel Diston of Henry Diston & Sons started for the West on Monday, expecting to be absent about ten days. He expects to visit several leading cities, making St. Louis and Chicago the extreme points West and North. The works at Tacony are quite busy.

The Iron and Steel Institute has sent a diploma acknowledging services rendered during the meeting in this country to A. J. Dull of Harrisburg, O. W. Potter, Chicago; Peter Primeau, Houghton; Richard A. Parker, Marquette; E. C. Pechin, Roanoke, Va.; Ferdinand Schlesinger, Milwaukee; Jay A. Hubbell, Houghton, Mich.; C. E. Eddy, Roanoke; R. W. Hunt, Chicago; Ben Carter, Birmingham; John H. Ricketson, Pittsburgh; J. H. Geer, Johnstown; G. W. Goetz, Newell Sanders, Chattanooga; David T. Day, Washington; H. H. Weaver, Johnstown; W. Bowron, Chattanooga; J. L. Colby, Milwaukee; John Birkinbine, Philadelphia; George A. Newett, Ishpeming; W. L. Abbott, Pittsburgh; H. R. Stoughton, Shelby, Ala.; Joseph D. Potts, Philadelphia; C. Kirchhoff, New York; Major J. W. Powell, Washington; A. A.

Arthur, Middlesborough; Robert H. Coleman, Lebanon; T. N. Ely, Altoona, and A. E. Hunt, Pittsburgh. The diploma is signed by all the past presidents, the past vice-presidents and the entire council of the Iron and Steel Institute.

### The Abendroth & Root Boiler in Philadelphia.

In *The Iron Age* of July 23 we published the letter of John Overn, Chief Inspector, to George Roney, Director Department of Public Safety of Philadelphia. This communication referred to the Abendroth & Root boilers at the Edison Electric Light Works, where, in January last, an employee of the company came to his death by being scalded with boiling water, the result of an explosion. Further light is thrown on the subject by the report of a committee of experts appointed by Mayor Stuart to examine these boilers. The result of the examination is here given:

We have carefully examined the parts of the boilers which have been damaged from time to time, as they were shown to us by the Edison Electric Lighting Company at their works and office, the character of which has been already detailed by the reports of Chief Boiler Inspector John Overn to the Department of Public Safety, and which we find to be substantially correct.

We have also carefully examined into the changes made by the Edison Electric Lighting Company to the fitting of their headers and return bends, and the details involved in their attachments to each other.

These changes are as follows:

A joint ring made of stamped brass, U shaped in section, and sufficiently light to yield before the pressure upon it, and dangerously interfere with the flexibility of the boiler, to produce dangerous strains upon the several details of their attachments. This ring is inserted between the header and the bend, for the purpose of making that joint steam tight, and has its bearing only on its outer edge.

The provision for greater freedom of the bolts securing the bends to the headers in the holes through which they pass.

The more careful fitting and alignment of the bends to the headers.

The use of a wrench of limited length, by which the strain upon the bolts attaching the bends to the heads will be limited to an amount no more than sufficient to secure the joint against leakage.

We have also further examined into the method of operation of these boilers, and find that they are working under a forced blast, which, by our deductions from the log of the Edison Electric Lighting Company, we find to vary from a maximum of 2 7-10 inches to zero, as measured upon a differential column of water.

We observe also, from the records of the log, that the maximum pressure referred to occurred in October, 1890, and that the pressures have been gradually reduced to the present time.

Upon the investigation of the effect of the various blast pressures upon these boilers we find that at the present reduced pressure of water, measured as previously stated excessive priming occurs, so much so that it is questionable to what extent the removal of the water from some of the tubes of the boiler may occur.

The absence of water from any of the tubes during longer or shorter periods is conclusively shown by the excessive distortion of the lower row of tubes, the necessity of their frequent renewal and their frequent cases of rupture.

Regarding the changes made by the Edison Electric Lighting Company, as already referred to, we find they are conducive to a greater flexibility of the boiler, and that with the application of the bends by methods which they have instituted less danger will exist due to the expansions and contractions of the several parts of the boiler.

But these changes alone will not give the desired security against accidents. So long as their present conditions of operation continue, and the periodical absence of water in the tubes occurs, the boilers will not be safe.

Therefore, to guard against further injury to life and property, the management of these boilers requires to be changed.

It is necessary, therefore, to reduce the pressure of blast to an amount which will secure the boilers against dangerous priming, and the maximum intensity of this under grate blast which we believe to be admissible will be found

to be about 2-10 inch of water, measured as previously stated.

We, therefore, recommend that the Department of Public Safety issue certificates of inspection for these boilers after the changes in construction above referred to have been completed, and when operated under the existing conditions of grates and stack. Provided, the under grate blast pressure be restricted to an intensity not exceeding 2-10 inch of water, measured as previously stated, and under the supervision of the proper city authorities.

Should it be found that a further reduction of intensity of blast be necessary, that it be still further reduced or discontinued entirely. The commission consisted of S. M. Vauclain, W. E. Good and Robert Crawford.

### Responsibility for Acts of Employees.\*

One who employs others in and about the conduct of his business thereby becomes charged, as a matter of law, with a responsibility to the public for the result of their acts, which sometimes proves to be a serious and important one. In general, it may be said, the employer will be held to strict accountability for the acts of his employees, done under his authority, actual or implied, and within the scope of their employment.

It is by no means necessary that the authority of the employee should have been specifically conferred in each case, but it is sufficient if it be such an act as is properly or necessarily connected with or incidental to the employment in which the employee is engaged. Most employees work under general authority rather than specific instructions, and therefore, if it were necessary, in order to fix the responsibility of the employer, to show his specific authority, there would be few cases in which the employer would be liable. Where an employee is engaged to perform a certain service, it is presumed that he is vested with authority to do all that is necessary to perform that service. And for the improper discharge of that duty the employer is liable.

A clerk who is employed to sell goods is not ostensibly employed for the purpose of misrepresenting the goods he sells, but if he does misrepresent them the employer is responsible to the person thereby injured. And this is true although the employer may have instructed him not to misrepresent his goods. It is not enough for the employer to instruct his employees to perform their duties properly, for this is incumbent upon them without instructions. The employer must see that his employees do fulfill their duty, and, failing in this, is responsible. However, the acts complained of must be performed in connection with and within the scope of employment for which the employee was engaged. Thus, if a man employed to drive a delivery wagon should, without authority from his employer, assume to sell goods to a customer, unless the circumstances are such as to charge the employer with liability for failure to prevent him, no liability will attach for improper fulfillment of such self-imposed duties. But the acts need not be a part of the employment. It is no part of the employment of a wagon driver to inflict injuries upon other persons, but if this results from careless and negligent driving while on the business of the employer, the latter is liable for any damages sustained. An employer is liable for damages sustained by others through the negligence of his employees in leaving obstructions about the store, leaving trap doors open, and such other acts as render the proper use of his premises dangerous. A person may recover for injuries sustained by falling through an open trap door in a part of the store where it was

\* Copyrighted, 1891, by the Law News Bureau.



not necessary for him to go in making his purchases, provided there was no attempt made to keep him from going there, as a man has a right to assume that a merchant who opens his premises for the sale of goods thereby invites him to visit them, and that they are in a safe and proper condition. An employer may under some circumstances be held liable for damages resulting from an assault upon a customer engaged in buying goods by a clerk employed to sell them to him. An employer is liable in damages to a person wrongfully arrested at the instance of a floor walker on the charge of shoplifting, although instructions have been given to have no arrests without consultation with the employer.

These instances are cited to illustrate the variety of circumstances to which the principle of an employer's liability for the acts of his employees may be applied. The law will not permit a man to place another in his place to transact his business without placing upon the employer full responsibility for the acts of the employee. It is the duty of the employer to see to it for himself that his employees are safe and trustworthy. Because of the fact that most employees faithfully perform their duties, cases at law arising out of this principle are, comparatively speaking, few, and because of this fact the responsibility itself is too often forgotten and overlooked until some employer suddenly finds himself confronted with a judgment for damages he did not know he was liable for. The only safety of the employer from such losses as these lies in the character of the men employed. The liability is one that can be guarded against in no other way, for it cannot be shifted to other shoulders, and no regulations and instructions, though briefly outlined here, should have much weight in the determination of the labor question by the careful man. The rarity of its enforcement sinks this principle somewhat into oblivion, but it exists none the less, and the prudent man will see that he stands in no danger of being mulcted in profitless damage suits of this nature.

### The Production of Aluminum.

From the Census Office a bulletin relative to the production of aluminum has been issued. The following is given in this bulletin concerning the output of that metal in the United States:

In the last decade electro-metallurgical processes for obtaining aluminum have become favorite subjects for patents with inventors. It is sufficient to describe briefly the two which have been commercially successful in this country, and they will serve as types of all. The earlier of these, the Cowles process, was established in 1885, and is carried on by the Cowles Electric Smelting and Aluminum Company at Lockport, N. Y. It is at present (1890) confined to the production of aluminum alloys, viz., aluminum bronze (and brass) and ferro-aluminum. This was the pioneer of such processes in the United States, and created an industry which has since been developed and extended. This process, which is now well known to persons interested in metallurgy, consists in passing the current from a powerful dynamo through a mixture of alumina (in the form of corundum, bauxite, etc.), carbon and pieces of copper contained in a suitable vessel lined with carbon, through the ends of which vessel the large terminals of the dynamo are inserted. The mixture is arranged so as to prevent short circuiting. On passing the current the alumina is reduced in the presence of carbon and unites with the molten copper to form an alloy rich in aluminum. This alloy is afterward remelted, and

enough copper added to it to reduce the aluminum contents to the proportions desired for aluminum alloys of the required grades.

The Cowles Company have produced aluminum bronze as follows:

#### Product of Aluminum Bronze.

Years.	Pounds.	Value.
1885.....	4,000 to 5,000	\$1,600 to \$2,000
1886.....	50,000	20,000
1887.....	144,764	57,000

Besides aluminum bronze the Cowles Company make ferro-aluminum by the same process by which the bronze is made, substituting iron for copper. The alloy, containing from 5 to 10 per cent. of aluminum, is used as a vehicle for introducing aluminum into molten iron to increase its tensile strength and solidity. An idea of the growing demand for ferro-aluminum for this metallurgical use is obtained from the statement of the Cowles Company that they made in 1886 from 2000 to 3000 pounds, valued at from \$780 to \$1170, and in 1887 42,617 pounds, valued at \$16,621. The total aluminum alloys produced in 1889 was 171,759 pounds.

Many proposals have been made and many patents obtained for making alloys of aluminum with iron and sometimes with copper by reducing alumina with carbon in the presence of fluxes and the metals. Clay, kaolin and other compounds of alumina, it is asserted, may be used for this purpose. Sometimes the iron or copper is added to the melted mixture used as a "bath;" sometimes the mixture is added as a flux to iron in a cupola or similar furnace, and sometimes it is used as a paste on iron, which is then heated. The object in most cases is to make an iron aluminum alloy for "beneficiating" iron. The announcement of the good effect produced on iron by adding minute quantities of aluminum to it while melted and Mr. Kee's experiments on this subject have probably led inventors to patent processes of the above kind. It is to be regretted that these processes do not yet offer clear and certain evidence that they are distinct and decided improvements like the electrical processes, or, indeed, that they are operative in the manner described. The Herault process, which, like the Cowles, makes aluminum alloys, had not been put into commercial operation in this country up to the close of the census year.

In the United States the extraction of aluminum itself is also effected by dynamo electricity, and is a new industry carried on by the Pittsburgh Reduction Company, at Pittsburgh, Pa., operating under the patents of C. M. Hall. The process consists in forming a fused bath of the fluorides of aluminum, calcium and sodium, to which calcium chloride is subsequently added, by melting a mixture of cryolite, aluminum fluoride and fluorspar in a suitable vessel lined with carbon, adding alumina thereto, and then separating the aluminum by the current from a dynamo, the carbon electrodes of which dip into the bath. The process is continuous, because the alumina is renewed as it becomes exhausted. One merit of the process is that the fused bath is of less specific gravity than the aluminum set free, which therefore sinks to the bottom of the vessel. If alloys are desired the negative electrode is formed of the metal which it is desired to alloy with aluminum. Variations in the composition of the bath are described in the different patent specifications, but that above given is believed to be the one used in practice. This company produced 19,200 pounds of aluminum in 1889, which was sold at \$3 per pound in quantity. The total production of aluminum in the United States during 1889, including that contained in alloys, was 47,468 pounds, with a total value of \$97,335.

## Washington News.

(From Our Regular Correspondent.)

WASHINGTON, D. C., August 4, 1891.

The expert officers on duty at the Ordnance Office of the War Department, in connection with the proposed test of the 12-inch army gun, have been making a series of valuable preliminary experiments on the quality of powder. The German cocoa has always had a sort of prestige beyond all other similar explosives in use by other countries. In view of this fact the Ordnance Office procured a supply of the best quality cocoa from German manufacturers, and after some scientific tests proposed to practically experiment with it in the new 12-inch gun before beginning the tests of the gun itself. The full charge of the gun was 440 pounds, but it was proposed to begin with a charge of 375 pounds. Accordingly that quantity was used. Upon examination this diminished charge indicated a pressure of 36,000 pounds to the square inch, and realized a velocity of but 1870 feet to the second. The conditions proposed by the Ordnance Office were a maximum pressure of 35,000, giving a velocity of 1940 feet with 440 pounds powder. The result therefore was not satisfactory. A charge 65 pounds less than regulation, producing 1000 pounds more pressure to the square inch and 70 feet less velocity per second, were conditions so wide of the standards that further experiments were abandoned until suitable powder of home manufacture could be obtained.

The experts of the Duponts' mills gathered some valuable points from the firing of July 24 which they will utilize. They report that they will be able to produce a powder superior to the German and which will not only yield all the conditions which the Ordnance Office will require to make the test of the new gun complete, but will possess uniformity of results in the future. As soon as the Duponts' are ready with their new combination it will be tried, and when the point is reached to produce the results desired the practical test of the gun will be commenced. One thing has already been discovered, and that is that the German cocoa powder for high-power guns is a failure as far as American standards are concerned.

In speaking of the gun one of the ordnance officers said: "The tube jacket and trunnions were made at Creusot, in France, simply because at that time we could not make them at home. The French parts were not at all satisfactory. We were obliged to re-treat them. Before we could use the French jacket tube and trunnions we were compelled to send them to an American establishment to be put in condition for our purposes. All these conditions will now be met by producing all the parts of the guns of the future in our own establishments."

The Ordnance Office will now give increased attention to the vital subject of gun carriages. The carriage at Sandy Hook is fitted with hydraulic buffers, and is simply for experimental work at the proving ground. The Ordnance Department is in need of a modern disappearing gun carriage for 8 and 10 inch guns, and also a standard barbette carriage for the 8, 10 and 12 inch guns under contract. This will now open an extensive field for American ingenuity. All the foreign carriages are regarded as defective in construction and efficiency, according to American standards.

It having been practically decided to give the hundred 8, 10 and 12 inch gun contract to private establishments, the Bethlehem Company will be the successful bidders. The object is to begin the deliveries of the guns at the earliest date,

and thereafter to have deliveries as rapidly as possible. The Bethlehem Company, anticipating this condition, submitted their bids under five schedules, A to E, which have already appeared in *The Iron Age* in official detail.

Before making their final report the Board of Fortification and Ordnance will examine all the intricate details of time and cost for each class of gun. The Bethlehem Company, besides being within the limit, as has been seen, are far below the Midvale and South Boston figures. It may be some days before the Board will finally act. The government ownership of an extensive gun making plant, at the Watervliet Arsenal, which would be idle if the guns now authorized are manufactured by private parties, somewhat complicates matters. It is feared that it will lead to some notice in Congress, and may embarrass future appropriations.

### The Taylor Producer.

The Taylor gas producer is steadily gaining in popularity, and its use is being extended to new industries. Its latest success is in connection with gas engines. The use of producers for running gas engines has been developed very considerably in Europe, but is only in its infancy in America. The work done abroad, however, shows that it is more economical than even the best work done by the most elaborate and expensive steam engines and boilers. One and a quarter pounds of coal per horse-power is not an uncommon figure in the foreign reports on gas-engine work with producer gas.

The producer has done good work in connection with the Otto gas engine at the works of Schleicher, Schumm & Co. on Philadelphia. The only loss is due to radiation through the walls of the producer and a small amount of heat carried off in the water from the scrubber. They have been running their shop engines regularly for some months with producer gas, and, in addition, have made experiments on a 100 horse-power engine, which shows remarkable results in coal consumption. Their last figures show a consumption of  $\frac{27}{100}$  pound of carbon per indicated horse-power per hour. This result is superior to any ever obtained on a steam engine, or even on the best gas engines abroad. Schleicher, Schumm & Co. express themselves highly pleased with the quality of the gas obtained from the Taylor producer and its entire suitability to this class of work. There is a wide field for the application of gas engines running on producer gas, in which great economies may be obtained. The larger sizes of engines are best adapted for this fuel, and the future for it will probably be in engines above 50 horse-power.

Dubuque, Iowa, has lost one of its most enterprising citizens in the death of A. Y. McDonald, which occurred in that city on the 29th ult. Mr. McDonald was a manufacturer of hand and force pumps, and through his genius and enterprise had built up a very large business in that specialty, his trade extending to all parts of the country. He maintained a branch house in Chicago. Some ten years since Mr. McDonald was shot by a burglar and his system never fully recovered from the shock.

The autumn meeting of the Iron and Steel Institute will be held in London on the 6th, 7th, and if required the 8th, of October.

The Cowles Electric Smelting and Aluminum Company, at Lockport, N. Y., have dropped the price of pure aluminum in ton lots 50 cents a pound.

## MANUFACTURING.

### Iron and Steel.

The Duquesne Tube Works Company of Pittsburgh, Pa., whose plant is located at Duquesne, Pa., recently added a lap-weld furnace to their plant with necessary gas producers. We are advised that the report that this firm contemplated erecting a rolling mill is without foundation.

The Pressed Steel Brake Beam Company have been organized at Pittsburgh for the purpose of manufacturing and putting on the market an improved brake beam made of pressed steel. The report that the new firm would succeed the present firm known as the Schoen Mfg. Company, manufacturers of articles in pressed steel for railways and car construction, is without foundation. The new company will be operated as a separate and distinct organization.

The coke blast furnace which E. J. Bird, Jr., of Ironton, Ohio, and his associates are to build at Covington, Va., will be 18 feet x 75 feet in size, and equipped with three 18 feet x 70 feet Gordon-Whitwell-Cowper stoves. An engine from Marion Furnace, at Minersville, Pa., and an I. P. Morris engine from Boonton, N. J., have been removed to Covington. The rumor that Mr. Bird's Ironton, Ohio, furnace would be removed to Covington is incorrect. This furnace is in full blast, and will continue to run as usual.

Furnace No. 2, operated by the Junction Iron Company, located at Mingo Junction, Ohio, made in July 6301  $\frac{1223}{2255}$  tons of Bessemer iron, and stopped one day, making an average output of 210 tons. The average of the daily analyses of the iron showed 2.61 silicon, 0.034 sulphur. The fuel consumption was 1830 pounds. The furnace is 75 feet high, 17 feet bosh and 10 feet well. It is blown by two 48 x 84 Mackintosh, Hemphill & Co. engines, the blast being heated by three 30 x 70 feet Gordon-Cowper central combustion chamber fire brick stoves. The plate mill, nail factory and steel plant, located at same place, are running full and making excellent results.

The Wheeling Corrugating Company of Wheeling, W. Va., have secured the contract for the metal roofing and siding for the whole of the new buildings to be erected by the Boston and Montana C. C. & S. Mining Company, Great Falls, Mon., for smelting works. These buildings, which are to be wholly of iron construction, will be erected by the Berlin Bridge Company of East Berlin, Conn., and will be very extensive. The contract for the roofing and siding is an important one and was actively competed for by several roofing companies.

Announcement is made that the interest of John H. Shoenberger, deceased, in the firms of Shoenberger & Co., proprietors of the Juniata Iron and Steel Works of Pittsburgh, and Shoenberger, Speer & Co., proprietors of the Shoenberger furnaces in that city, will be sold at public sale on Thursday, September 3 next, at 10 a.m. Mr. Shoenberger had a five thirty-seconds interest in each firm, which was appraised on July 1, 1890, at a value of \$208,079.82. The sale will be conducted by A. Leggate & Sons, auctioneers, of Pittsburgh, Pa.

The nail factory of the Belfont Iron Works Company, at Ironton, Ohio, which has been idle for some time, resumed operations on Monday, the 3d inst.

T. C. Jones, for some years general manager of the Virginia Nail and Iron Company of Lynchburg, Va., has commenced work at Irongate, Va., on a blast furnace for a company to be known as the Allegheny Iron Company. The organization of the company is not yet completed. The furnace is to be 13 x 65 feet in size, equipped with Taws & Hartman fire brick stoves, 16 x 70 feet in dimension, and Weimer blowing engine. The furnace will use coke for fuel, and will probably be in operation in about one year from the time of commencing work.

The plant of the Globe Rolling Mill Company, at Cincinnati, Ohio, is advertised to be sold at public auction on the premises on September 1 next. If a satisfactory price is not bid for the mill as a whole, the separate parts will be immediately offered for sale until the whole is closed out. It is understood that the terms will be cash, and the entire mill must be moved from present site within 60 days from date of sale.

On Wednesday, the 29th ult., a serious accident occurred at the plant of the Elba Iron and Bolt Company of Pittsburgh, which was recently purchased by the Oil Well Supply Company, Limited, of that city. A number of extensive improvements are being made at the

plant by the last-named firm, and while work was going on a large stack fell, burying a number of men beneath the ruins. Three men were killed outright, and a number very seriously injured. An investigation is now being made as to the cause of the accident.

The plant of Brown, Bonnell & Co., of Youngstown, Ohio, is being operated to its full capacity in all departments and sufficient orders are on the books to insure a continuance of operation for some time to come.

On the night of the 28th ult. the 12 hour turn in the converting department of the Edgar Thomson Steel Works of Carnegie Bros. & Co., Limited, at Braddock, Pa., working from 6 p.m. to 6 a.m., made 62 heats, and turned out 938 tons of steel. This is believed to be the largest output ever produced under similar circumstances.

A charter has been issued to the Birmingham Iron and Steel Company of Pittsburgh, with a capital stock of \$50,000. The incorporators are W. H. Williams, J. C. Williams, Chas. Large and T. M. Thomson. The new concern proposes to erect an open-hearth steel plant at Kensington, on the line of the Allegheny Valley railroad, about 20 miles from Pittsburgh. Work on the plant will probably be commenced in a short time.

Furnace No. 1 of the Cambria Iron Company, at Hollidaysburg, Pa., which has been idle for some months, was put in operation last week.

The Eliza Furnace, at Wellston, Ohio, which has been idle for a number of years, will shortly be dismantled and the machinery sold.

Etna Furnace, Etna, Ga., now undergoing repairs, will blow in August 10.

Articles of incorporation of the Wrought Steel Company were filed at Trenton, N. J., last week. The capital stock authorized is \$2,000,000, and the incorporators are Wm. P. Shinn, of Pittsburgh; Smith M. Weed, George W. Bentley, Edward A. Smith and Nicholas W. Nivan of New York, and James W. Roach of Camden. The company will manufacture wrought solid steel car wheels for railroad use. Mr. Shinn will be president.

The Totten & Hogg Iron and Steel Foundry Company of Pittsburgh, Pa., have just closed a contract with the James Smart Mfg. Company of Brockville, Ont., Canada, for a special train of rolls, complete, for cold rolling and finishing steel for a special purpose.

The Montour Iron and Steel Company, Danville, Pa., have closed down the only remaining furnace they had in blast. The rolling mills continue idle owing to the refusal of the company to sign the scale.

Touching the iron business, George Brooke, president of the Brooke Iron Company, near Reading, spoke hopefully of general prospects, owing to plentiful crops, and said the railroads might help the present situation very much "by a reduction of freights, which would inure to their benefit as well as to iron manufacturers and business in general. A reduction of freights would enable us to compete with the iron from the South, their freights on raw material being considerably lower than ours per ton per mile. The freights of a good-sized furnace amount to \$100,000 a year in the shipment of ore, fuel, limestone and pig metal. A furnace in operation also benefits a railroad company in other respects. One of our furnaces has been idle since February, owing to low prices for iron, though the furnace was in good working condition, and could have run at least another year before repairing it. A reduction in freight rates would be a strong inducement to put idle furnaces into blast." When the Brooke Iron Company are running full handed 50,000 tons of pig iron are turned out annually, 65 tons of puddle bar a day and 1200 kegs of nails a day.

No. 3 furnace of the Woodstock Iron Company, at Anniston, Ala., has been put in blast.

The North Carolina Steel and Iron Company of Greensboro, N. C., have contracted for a new coke furnace to be built at that place. This will be the first coke furnace ever built in that State.

It is reported that the Rome Cotton Tie and Mfg. Company, at Rome, Ga., will double the capacity of their rolling mill.

The Log Mountain Coal, Coke and Timber Company have been incorporated at Pineville, Ky., for the purpose of building iron furnaces, coke ovens, developing mineral lands, &c. The authorized capital stock is \$2,000,000.

The first cast of Bessemer steel at the Sparrows Point Works of the Maryland Steel Company was made on the 1st inst.

Work has commenced at the Lake Erie Iron Company's mills, at Cleveland, Ohio, after a long period of idleness caused by the



refusal of the company to sign the Amalgamated scale. Owing to the suspension of work the company are overloaded with orders, and the mills will be worked to their utmost capacity.

The Midvale Steel Works, Nicetown, Philadelphia, are contemplating the erection of a steam crane having a lifting capacity of 150 tons, to travel on a bridge 100 yards long, extending from the open hearth to the ordnance forging department.

#### Machinery.

The Buckeye Bell Foundry, at Cincinnati, Ohio, has been damaged \$10,000 by fire; loss covered by insurance.

A movement is said to be on foot at Dubuque, Iowa, to organize a company to take the place of the Iowa Iron Works, when that concern moves to St. Louis, Mo.

The new brass foundry of the Colton Mfg. Company, at Montpelier, Vt., has been put in operation.

The Buda Mfg. Company, Harvey, Ill., have commenced work on a new foundry building 80 x 120 feet in size.

The Hanover Machine Works have been organized with a capital stock of \$100,000, at Frederick, Md., for the purpose of manufacturing machinery.

The Southern Engine and Boiler Works Company, Jackson, Tenn., will build a new boiler house 65 x 100 feet in size.

At the extensive works of Schleicher, Schumm & Co. of Philadelphia they are turning out, besides intermediate sizes, gas engines of from  $\frac{1}{2}$  horse-power to 100 horse-power. Both these classes of engines are comparatively new features, but the demand for both small and large powers is increasing.

Byram & Co. of Detroit are now executing the contract for two of their large-size Colliery cupola furnaces for the Grant Locomotive Works, Chicago, Ill. This company recently supplied the United States Government with the third cupola furnace, this last being for use at the Watertown Arsenal, Watertown, Mass.

#### Hardware.

The Powell Wire Nail Machine Company of Cleveland were incorporated by Stevenson Burke, E. J. Ingersoll, E. T. Ives, D. A. Dangler, W. J. White, R. Powell and H. C. Emission. Capital stock, \$250,000.

E. T. Barnum, manufacturer of art wire and iron work of Detroit, Mich., reports an active foreign trade in his line. He has just filed a large contract for wire cloth which was shipped to Port Melbourne, Victoria, Australia.

The annual meeting of the stockholders of the Peck, Stow & Wilcox Company, Southington, Conn., was held on the 29th ult. The Board of Directors now consists of the following gentlemen: E. E. Stow, W. R. Walkley, M. B. Wilcox, Stephen Walkley, Samuel Sessions, S. Howard Wilcox, Fred Wilcox, M. C. Odgen and A. R. Treadway. The following officers were elected for the ensuing year: E. E. Stow, president; M. B. Wilcox, vice-president; Stephen Walkley, treasurer, and S. D. Neal, secretary. A quarterly dividend of  $\frac{1}{2}$  per cent. was declared.

At the annual meeting of the stockholders of the Gilbert & Bennett Mfg. Company, Georgetown, Conn., held on July 28, the following directors were elected for the ensuing year: Edwin Gilbert, Elbert B. Monroe, David H. Miller, Samuel J. Miller and Louis G. Beers. At a meeting of the directors, held subsequently, the following officers were elected: Edwin Gilbert, president and treasurer; David H. Miller, vice-president and secretary; Samuel J. Miller, general superintendent, and Louis G. Beers, Chicago manager and general sales agent. The usual dividend was declared.

#### Miscellaneous.

The Cooke Locomotive Works at Paterson, N. J., which closed down some weeks since, owing to lack of orders, have resumed with about 1500 hands, large orders having been received from Western roads for locomotives.

The Beach Mfg. Company of Hartford, Conn., have decided to abandon their works in that city, and to remove their entire plant to Beacon Falls, Conn.

It is rumored that the Winona and Southwestern Railway Company have purchased the Winona Harvester Works at Winona, Minn., and will convert them into an extensive car manufacturing.

The Pottsville Insulated Wire Company of Philadelphia have been chartered at Harrisburg, Pa., to manufacture insulated wire and cables and electrical appliances.

The Harvey Steel Car Company at Harvey, Ill., are erecting a new repair shop 80 x 175 feet in size.

The stockholders of the New York Locomotive Works, Rome, N. Y., have voted to increase the capital stock from \$300,000 to \$400,000.

The Illinois Secretary of State has issued incorporation licenses to the following: The Chicago Knob Lock Company, at Chicago; to manufacture locks and hardware; capital stock, \$10,000; incorporators, J. F. Tregay, George Brandy and E. Whittingham. The Waukegan Iron and Steel Castings Company, at Waukegan; to do a general foundry and machine shop business; capital stock, \$50,000; incorporators, E. L. Lamb, F. W. Upham and A. G. Clark. The Consolidated Railway Equipment Company, at Chicago; to manufacture railway equipments; capital stock, \$500,000; incorporators, W. S. Kilmer, F. A. Sperry and Edwin Haynes. The United States Mine Equipment Company, at Chicago; to manufacture mining equipments and to do a mining business; capital stock, \$1,000,000; incorporators, S. Victor, N. Hunt and L. W. Young.

The contract for the Boston and Montana Copper Company's new steel buildings at Great Falls has been awarded to the Berlin Iron Bridge Company of East Berlin, Conn. The machinery for the smelter is to be supplied by Fraser & Chalmers. The contract price for the buildings is said to be \$58,000.

Pratt & Whitney Company of Hartford, Conn., have just completed a new building which has been erected for the use of the extensive small tool department of the factory. The structure is 300 x 45 feet, two stories high, with basement, built of brick, with heavy stone foundations and slate roof. The first floor will be occupied by machinery for the general manufacture of small tools, of which the Pratt & Whitney Company make about 2500 different kinds. Part of the second floor will be used for the storage of finished tools, of which the company carry a large stock, and the remainder for tempering, grinding and general finishing.

#### Curved Arms in Pulleys.

Is there any good reason why the antiquated designs of pulleys and fly wheels, discarded so long since by progressive machine manufacturers, should still be adhered to in many large, as well as smaller, establishments? Are there any mechanical principles involved, theoretical or practical, or both, which would suggest the necessity or advantage of making curved instead of straight arms to support the rims? And, admitting that there were good and valid reasons for the adoption of this design in the past, does not the fact that the best practice of to-day prescribes straight arms suggest that those reasons no longer exist? If we analyze the functions of the different members of a pulley, it would not appear difficult to ascertain the simplest form of device which would enable us most effectively to meet the requirements. But there are other considerations involved besides the mere matter of efficiency. Difficulties in construction of machines frequently necessitate modifications in design, and the original and probably the only object in curving the arms of cast-iron wheels was of this nature. The variable shrinkage of hub, arms and rims, where straight radial arms were used, caused severe and even dangerous strains, resulting either in the fracture of the casting while cooling or liability to serious accident while in use. As this unequal contraction was the result of improper manipulation in molding, pouring and cooling, so a better understanding of the requirements has enabled the founder to obviate the difficulty, and thereby the necessity for meeting it.

The strains to which a pulley wheel is subjected, though of an exceedingly complex nature, need only be considered with reference to the most important. In every revolution of the wheel these strains pass through a complete cycle of changes, ultimately amounting to an entire reversal. But as each can be considered and provided for independently of the others,

this prevents any complications of the problem. For instance, in the rim there is the compression strain, due to the pressure of the belt on the arched surface with which it is in contact. And operating against the compression and to a certain extent neutralizing it is the tensile strain from the centrifugal force due to its periphery speed. On the opposite side of the face, however, the compression is entirely absent, and therefore the full tensile strain is effective. As at ordinary speeds this is very much less than the pressure of the belt, it is not necessary to consider it, but at a high rotative velocity it becomes the most important, and therefore in designing the pulley the tensile strength of the iron must be very carefully calculated. In either case, the compression and tensile strains, considered with reference to their effect on the arms—also the transverse strain caused by the torsional function of transmitting or receiving the power, or in case of a mere fly wheel of overcoming the inertia and maintaining the speed of its heavy rim—are the factors in the problem. If the arms were designed to give the maximum degree of strength and stiffness possible for the amount of metal they contained, it would be necessary to take into account whether the pulley were to act as driver or driven, and in that case the arms would not be radial, but tangential to the hub, so as to perform the function of a rigid column supporting the load due to belt strain on the rim in a line perpendicular to the compound strain due to pressure and torsion. But as in practice it is generally desirable to have pulleys of uniform pattern for either driver or driven, it is necessary to adopt a form of arms which will answer equally well for either purpose—i. e., a mean between the two, which would be radial. This gives a direct columnar resistance to the belt pressure, and with the pulley at rest is the strongest form. But as soon as the power is applied the torsional strain from the belt produces an additional set of conditions, and the arms assume also the function of a beam fixed at one end and loaded at the other. Considering these two functions with reference to curved arms, we find, as regards the first, that it is analogous to a loaded column of the same form. One of the fundamental principles of construction is that the center of gravity of a column and its load shall be as nearly as possible in the central axis of the column throughout its length. If it were curved like a pulley arm, or even slightly, as sometimes happens from warping or unequal shrinkage, the column would be at once rejected. A stone or brick arch carrying its load on the crown is one of the strongest forms of construction, but if it were placed on end and the load applied vertically it would be one of the weakest. Considered as an overhung beam the curvature adds to the length, and therefore reduces the transverse strength in proportion to the increase in length.

A straight radial arm of proper cross section gives a perfect column and the shortest possible length of beam, consequently it is best adapted to meet the requirements where it is desired to use the wheel indiscriminately to run in either direction; or, if it be desired to use it for one specific purpose only, then a straight tangential arm will most directly support the strain when the pulley is in motion, and will be proportionately weaker when at rest under the radially compressive strain from the belt tension. Aside from functional considerations, and from a purely economic standpoint, the straight arm is cheaper both in cost of pattern, cost of molding and weight of metal. As to symmetry, there can hardly be a question that the straight arm has the advantage. Is there any good reason, then, for continuing the use of curved arms?

# TRADE REPORT.

## Chicago.

(By Telegraph.)

Office of The Iron Age, 50 Dearborn street, }  
CHICAGO, August 5, 1891.

The market here seems to be spasmodic in nearly every line. There are alternations of activity and dullness and of good and bad trade which mystify buyers and sellers alike. The condition of affairs one day or one week seems to be no criterion on which to form an opinion of the following day or the following week. One thing, however, is apparent, and that is that prices on most Iron and Steel products are not any firmer than they have been, while in some instances the values realized have been as low as anything previously known.

**Pig Iron.**—Coke Iron is in better demand again, and quite a number of sales are reported in lots of 200 to 500 tons. Local makes have been the most favored. Southern brands are, however, beginning to be inquired for, and the nature of the inquiries are such as to promise a good volume of business during the month. Charcoal Iron is rather dull, but large sales made to Eastern consumers have put some of the furnaces in so much better shape that some influence must be exerted on the market. Prices are no higher than they have been, but the danger of a relapse to the very low rates of last spring is less imminent. An encouraging indication of the condition of consumers is their urging deliveries even in advance of the stipulated time, which has been latterly done in several cases by parties who not long since wanted deliveries deferred. Consumption is plainly increasing, and there must, therefore, be a better demand for finished products. Quotations are unchanged, as follows, cash, f.o.b. Chicago:

Lake Superior Charcoal.....	\$17.00 @	\$17.50
Local Coke Foundry, No. 1.....	15.50 @	15.50
Local Coke Foundry, No. 2.....	15.00 @	15.25
Local Coke Foundry, No. 3.....	14.50 @	15.00
Local Scotch.....	15.50 @	15.50
Ohio Strong Softeners.....	17.75 @	18.25
Southern Coke, No. 1.....	15.75 @	16.25
Southern Coke, No. 2.....	15.00 @	15.25
Southern Coke, No. 3.....	14.50 @	15.00
Southern, No. 1, Soft.....	15.00 @	15.75
Southern, No. 2, Soft.....	14.25 @	14.75
Southern Gray Forge.....	14.00 @	14.00
Southern Mottled.....	13.50 @	14.00
Tennessee Charcoal, No. 1.....	18.00 @	18.00
Alabama Car Wheel.....	21.50 @	22.50
Coke Bessemer.....	17.00 @	17.00
Hocking Valley, No. 1.....	17.00 @	18.50

**Bar Iron.**—With the exception of a few season contracts to implement makers, sales have been rather scarce the past week. Inquiries are of an encouraging character. Wagon builders and implement makers are in the field to make contracts, but they hope to buy at cheaper rates and defer closing until they find they cannot help themselves. Jobbers have put out some large specifications and are testing the market very thoroughly. An order for 1000 cars was given out last week to Western builders and more are to follow. Mills quote 1.55¢, half extras, at works in the valley, and 1.65¢ @ 1.70¢, Chicago, for local Iron, with not much inclination on the part of manufacturers to yield for the sake of making a sale or two. Jobbers report a heavy trade from stock, and quote prices firm at 1.80¢ @ 1.85¢, full extras.

**Structural Iron.**—Plates and Sheets are unchanged as to price, with a fair amount of business doing in every branch. A great deal of figuring is going on involving the use of Structural Material and Plates, for which there must be heavy demand a little later. Galvanized Iron has not improved as was hoped, there still being sellers at very low figures.

**Merchant Steel.**—Sellers are looking forward to a heavy business soon with

wagon and carriage builders, who expect to be able to sell every vehicle they can turn out the coming season, although many of them have largely increased their facilities this year. Some contracts were made the past week with implement makers, but this trade is about ended. Agents are talking of an early advance in standard Steel as a consequence of the well supplied order books of the mills handling this class of trade. Tool Steel is in good demand at old prices, which show no sign of changing. We therefore continue to quote carload lots from mill, f.o.b. Chicago, as follows: Machinery Steel, 2.30¢; Open-Hearth Spring, 2.40¢; Tire, 2.30¢; Bessemer Bars, 2¢; all from good stock. Tool Steel is quoted at 7¢ @ 7½¢ and upward, according to quality.

**Track Supplies.**—While there has been no avalanche of Steel Rail orders, sales of small quantities are being steadily made, with an occasional 5000 or 10,000 ton lot, which makes the situation encouraging and gives the manufacturers a better and brighter prospect for the future. They quote \$31.50 @ \$33, according to size of order, time and place of delivery, &c. Splice Bars have not been active, and makers quote 1.85¢ @ 1.90¢. Spikes are firm as 2.20¢ @ 2.25¢. Track Bolts with Hexagon Nuts can be bought at 2.75 @ 2.80¢.

**Old Rails and Wheels.**—The situation in Old Iron Rails has been peculiar. While very few lots are offering, it is understood that some buyers have been able to get prices down to \$22.75. Holders generally ask \$23 @ \$23.25, and a consumer would perhaps have to pay more for a round lot. Old Steel Rails are quiet, with short pieces quoted at \$14 and long lengths at \$16. Old Car Wheels are a drug, and dealers now consider \$15 a good price, although carloads would bring \$15.50 and perhaps a little more.

**Scrap.**—Sales of high-grade Scrap are reported, but for all other kinds the demand is very limited. We quote as follows, per ton of 2000 pounds: No. 1 Railroad, \$19.50; No. 1 Forge, \$19; No. 1 Mill, \$14.50; Fish Plates, \$21.50; Axles, \$24; Pipes and Flues, \$13; Horseshoes, \$18.50 @ \$19; Cast Borings, \$8; Wrought Turnings, \$11.50; Axle Turnings, \$13; Machinery Cast, \$12.50; Stove Plates, \$10; Mixed Steel, \$11; Coil Steel, \$14.50; Leaf, \$16; Tires, \$16.50.

**Metals.**—Copper is a little weaker, carlots of lake now being quoted at 20½¢, and casting brands 12¢ @ 12½¢. Spelter is unchanged at 4.95¢ for Prime Western Pig. Lead has been sold to the extent of some 200 tons at 4½¢, but rates are now nominally from 4.20¢ to 4.30¢, according to the position of the seller.

## Philadelphia.

Office of The Iron Age, 220 South Fourth St., }  
PHILADELPHIA, Pa., August 4, 1891.

The commencement of the eighth month of the year does not show the degree of activity that was expected, and while it is too early to come to any definite conclusion on the subject, the immediate position is far from being satisfactory. As stated in a recent article, it would be an easy matter to build up a theory showing that business must improve and that prices must advance, but as yet neither of these desirable objects has been realized. The why may perhaps be found in a statement which appeared in several leading papers to-day, which was to the effect that the manager of a leading Western road had said that they needed an immense amount of rolling stock, and would be almost paralyzed for the want of it before the close of the year, but gave as a reason for not ordering it that they couldn't sell their bonds and therefore had no money to pay for any-

thing. This seems to be fairly representative not only of the railway interests, but of others, and until the deadlock is broken business must necessarily remain very much in its present condition. The country has every essential for prosperity, and some of these days capital will begin to realize that fact, and then may come the deluge.

**Pig Iron.**—Not the slightest change can be noted in this department. Good Foundry Irons are in limited supply, and therefore command full market prices, while other descriptions are dull, weak and irregular. The general demand is somewhat better, but there is so much Iron for sale that holders are well satisfied if they can get out at quoted rates or a fraction less, although there is no inordinate pressure to realize. It will require a better demand than there is at present, however, to hold prices firm at rates now supposed to rule. There is already some accumulation of stocks, especially of the lower grades, and as the output is still in excess of consumption, it is only a question of time when prices must yield, unless the demand becomes larger. At present there is nothing very pronounced in the way of improvement in the outlook, although on general principles, and as shown by nearly all previous experience, July is about the dullest month in the entire year, while the three following months are among the best. Notwithstanding the many disappointments during the past six or eight months, the trade are firmly of opinion that the fall of 1891 will develop a heavy business, although there is not the same unanimity of opinion in regard to prices. But the first step toward better prices must be a larger business, hence in the meanwhile the trade are waiting for some movement of that kind, and when realized the question of better prices will be taken into consideration. Sales during the week have been on the basis of figures recently ruling, although if bids were made at slight concessions there would be very little difficulty in securing ordinary grades in liberal quantities. In the absence of such demand prices range as follows, varying according to quantity, quality, point of delivery, &c.:

Ohio Softeners, No. 1x.....	\$19.00 @	.....
Ohio Softeners, No. 2x.....	18.00 @	.....
Standard Penna, No. 1x.....	17.75 @	\$18.00
Standard Penna, No. 2x.....	16.50 @	17.00
Medium Penna, No. 1x.....	17.25 @	17.50
Medium Penna, No. 2x.....	16.00 @	16.25
Virginia, No. 1x.....	16.75 @	17.50
Virginia, No. 2x.....	15.75 @	16.00
Standard Neutral All-Ore Forge	14.50 @	15.00
Ordinary Forge Cinder mixed ..	13.75 @	14.00
Hot-Blast Charcoal.....	20.00 @	22.00
Cold-Blast Charcoal.....	24.00 @	27.00

**Bessemer Pig.**—Demand very slow, although a few small lots have been taken at about \$16.25 at furnace for standard brands.

**Steel Rails.**—Market remains on the same dead level of monotony as for several months past. Demand for small lots only, for which \$30 at mills is realized.

**Steel Billets.**—Business shows a trifle more activity, but prices are irregular, and on the whole a little inclined toward weakness. Sales have been made at \$27.75 for deliveries in this vicinity, and if large lots would be taken it is intimated that still better terms would be named. Consumers are not bidding with much spirit, however, so that the market is barely steady at \$27.65 @ \$28 asked, and probably 50¢ less for deliveries more toward the interior. Freight rates from certain points are said to be cut 25¢ @ 50¢ per ton, which if true accounts in some measure for the mystery attending several recent transactions.

**Muck Bars.**—Market extremely dull. There are free sellers at \$26.50 @ \$27, f.o.b. cars, but buyers are unwilling to bid much over those figures delivered, so that there is little or nothing doing, as



sellers are not prepared to shade their asking prices except under special circumstances.

**Bar Iron.**—The demand is a trifle better, but the same cannot be said as regards prices. A few moderate sized lots have been called for, but compared with the supply they are a mere drop in the bucket, and sellers are as numerous as ever. There should be an immense demand from the railways, but, as mentioned in a previous paragraph, the companies have no money to spare, and sellers of material, as well as of cars and other equipments, are not in a position to give long time, hence everything waits for an easier money market. In other directions there is a pretty good demand, but nothing to stiffen prices, which are about 1.70¢ @ 1.80¢ for city deliveries, or 1.60¢ @ 1.65¢ at interior points.

**Plates.**—This department appears to be in comparatively good shape, although even here there is no very great demand. Some of the leading mills are quite full, however, for several weeks to come, so that the smaller concerns are kept fairly employed in meeting the day-to-day demand. There is nothing of special importance on the market at present, although there is a general impression that large orders may be presented at almost any moment, as there is work under way which will absorb an immense amount of material during the fall and winter months. Prices are barely steady, nevertheless, with the usual asking prices as follows for lots delivered in consumers' yards, but lower figures are met with on desirable orders:

	Iron.	Steel.
Tank Plates.....	1.95 @ 2.05¢	2.05 @ 2.10¢
Refined.....	2.20 @ 2.30¢	2.10 @ 2.20¢
Shell.....	2.30 @ 2.40¢	2.40 @ 2.50¢
Flange.....	3.20 @ 3.30¢	2.50 @ 2.75¢
Fire-Box.....	4.00 @ 4.25¢	3.00 @ 3.50¢

**Structural Material.**—Market a little quiet, but owing to a restricted output during the past few weeks, mills are kept pretty well employed on back orders. New business is disappointingly slow, and at the moment shows no indication of change either in price or demand. Nominal quotation are about as follows: Angles, 2.05¢ @ 2.10¢; Sheared Plates, 2¢ @ 2.10¢, and 10¢ @ 15¢ more for Steel, according to requirements. Tees, 2.5¢ @ 2.6¢; Beams and Channels, 3.1¢ for either Iron or Steel.

**Sheet Iron.**—The demand is fairly satisfactory for Heavy Sheets, but the lighter descriptions are neglected, and in some cases have sold at extremely low figures. The best makes, however, are quoted about as follows:

Best Refined, Nos. 14 to 20.....	3.00¢ @ 3.10¢
Best Refined, Nos. 21 to 24.....	3.10¢ @ .....
Best Refined, Nos. 25 to 26.....	3.20¢ @ 3.30¢
Best Refined, No. 27.....	3.40¢ @ .....
Best Refined, No. 28.....	3.50¢ @ .....
Common, $\frac{1}{4}$ ¢ less than the above.	
Best Soft Steel, Nos. 14 to 20.....	3¢ @ 3 $\frac{1}{4}$ ¢
Best Soft Steel, Nos. 21 to 24.....	3 $\frac{1}{4}$ ¢ @ .....
Best Soft Steel, Nos. 25 to 26.....	4¢ @ .....
Best Soft Steel, Nos. 27 to 28.....	4¢ @ .....
Best Bloom Sheets, $\frac{1}{4}$ ¢ extra over the above prices.	
Best Bloom, Galvanized, discount....	@ 67 $\frac{1}{2}$ %
Common, discount.....	@ 70 %

**Old Rails.**—There is hardly any demand for Old Iron Rails, the only sales reported for some time past having been a few carloads at \$22.50, delivered. Old Steel are wanted at about \$17.50, delivered, but \$18 and upward is asked.

**Scrap Iron.**—The market is extremely dull, but prices are maintained for good material. Sales chiefly at prices as follows: No. 1 Railroad Scrap, \$20.50 @ \$21.50, Philadelphia, or for deliveries at mills in the interior \$21 @ \$22, according to distance and quality; \$15 @ \$16 for No. 2 Light; \$14 @ \$15 for best Machinery Scrap; \$13 @ \$14 for ordinary; \$15 @ \$16 for Wrought Turnings; \$10 @ \$10.50 for Cast Borings, and nominally \$24 @ \$25 for Old Fish Plates, and \$16 @

\$17, delivered, for Old Car Wheels, with very little demand for either Fish Plates or Old Car Wheels.

**Wrought-Iron Pipe.**—Business is moderately active, but there is the same old complaint that prices are not maintained as they ought to be. Nominal discounts are as follows, but extra discounts are quite common on desirable orders:

Butt-Welded Black.....	55 %
Butt-Welded Galvanized.....	45 %
Lap-Welded Black.....	65 %
Lap-Welded Galvanized.....	52 $\frac{1}{2}$ %
Boiler Tubes, 2 $\frac{1}{2}$ inch and under.....	55 %
Boiler Tubes, 2 $\frac{1}{2}$ inch and larger.....	60 %

## Pittsburgh.

Office of The Iron Age, Hamilton Building, Pittsburgh, August 4, 1891.

**Pig Iron.**—Business has been extremely dull the past week; but, with an improvement reported in the products, there is reason to look for an improved demand soon for the raw material. There is no indication, however, of anything like a "boom." The outlook now seems to be favorable for a good, legitimate trade during the rest of the year, and there may be some improvement on present prices. We quote as follows:

Neutral Gray Forge.....	\$14.00 @ .....	cash.
All-Ore Mill Iron.....	14.50 @ 15.00.	"
White and Mottled.....	13.00 @ 13.50.	"
No. 1 Foundry.....	16.50 @ 16.75.	"
No. 2 Foundry.....	15.50 @ 15.75.	"
No. 3 Foundry.....	14.75 @ 15.00.	"
No. 2 Charcoal Foundry.....	21.00 @ 21.50.	"
Cold-Blast Charcoal.....	25.00 @ 27.00.	"
Bessemer Iron.....	16.00 @ 16.25.	"

**Muck Bar.**—Continues quiet, while prices remain unchanged, ranging from \$26.50 to \$27, cash, with most of the business reported of late at \$26.75. There may be an improved demand later on in the season, but the outlook is not very encouraging.

**Ferromanganese.**—There is a fair demand, chiefly for small lots for immediate or near-by delivery, with sales of 80 % domestic at \$66.50, cash, which has been the ruling price for several months.

**Manufactured Iron.**—Manufacturers generally report an increased demand; orders have been coming more freely for some time past, and mills, as a rule, are now pretty well employed, and the indications are that this will continue during the remainder of the present year. In addition to an increasing demand for Merchant Iron, manufacturers of Agricultural Implements have been buying freely of late, and the railroads are also pretty liberal buyers. Big crops throughout the country are now pretty well assured, and a good year for the railroads will result therefrom. They are now taking measures to increase their rolling stock, and this will necessarily cause a largely increased demand for Iron. Prices remain unchanged: City made Iron is quoted at 1.70¢ @ 1.75¢ for Bars; 2.10¢ @ 2.15¢ for Plate and Tank, and 2.75¢ @ 2.80¢ for No. 24 Sheet, all 60 days, 2 % off for cash. Skelp Iron is still quoted at 1.65¢ @ 1.67 $\frac{1}{2}$ ¢ for Grooved, and 1.87 $\frac{1}{2}$ ¢ @ 1.90¢ for Sheared, four months, 2 % off for cash. Advices from the Mahoning and Shenango valley districts report the mills out there well supplied with orders; also that prices are stiff and higher, being quoted on a basis of 1.60¢ @ 1.65¢ for Bars.

**Nails.**—The Cut Nail trade continues very poor, particularly in regard to price, which we continue to quote at \$1.55 @ \$1.60 for 35 average, 60 days, 2 % off for cash. The Wire Nail trade continues moderately active, but prices show no improvement; indeed, they are not as stiff as they were a few weeks ago. We now quote at \$1.90 @ \$1.95, 60 days, 2 % off for cash, f.o.b. at factory.

**Wrought-Iron Pipe.**—The Pipe trade continues in an unsatisfactory condition;

demand continues light for the season, and there is considerable competition for business. While the regular syndicate prices are regarded as being very low, they are, it is said, being cut more or less. Discounts on Black Butt Pipe, 55 %; on Galvanized do., 45 %; on Black Lap, 65 %; on Galvanized do., 52 $\frac{1}{2}$  %. Boiler Tubes, all sizes up to 2 $\frac{1}{2}$ -inch, 55 %, 3 to 6 inch inclusive, 65 %; 7 inch and upward, 55 %; Casing, all sizes, 55 %. The regular monthly meeting of the association takes place in Philadelphia.

**Old Rails.**—There has been an increased demand developed during the past week for Old Iron Rails, and with a scant supply and but few offering the market is firmer. In the absence of sales we quote at \$23 @ \$23.50. Old Steel Rails less active, and may be quoted at \$17.50 @ \$18. There are no Iron Rails being made, hence the supply of these is growing less every year.

**Billets and Slabs.**—There is a fair demand for Billets, but no change in prices. The most of the business for some weeks past has been at \$25.50, cash, f.o.b. at makers' mill, which may be regarded as the ruling price. The Carnegie mill, which was stopped for several weeks owing to labor troubles, is again in operation and is making Billets. This mill has a capacity of 700 to 800 tons per day.

**Structural Material.**—There is an increasing demand, and those mills making a specialty of the same are now pretty well supplied with orders. Prices remain unchanged, as follows: Beams and Channels, 3.10¢; Sheared Bridge Plates, 2.10¢ @ 2.15¢; Angles, 2¢; Tees 2.60¢; Universal Mill Plates, Iron, 2.05¢; Refined Bars, 1.80¢ @ 1.85¢.

**Steel Plates.**—There is nothing new to report; business continues light, while prices remain unchanged. There is but little shipbuilding on the Lakes this year, and there have been but few Government contracts made recently. We repeat former quotations: Tank, 2.10¢; Shell, 2.35¢; Flange, 2.55¢; Fire Box, 3.90¢ @ 4.25¢.

**Merchant Steel.**—There is a fair business at unchanged prices. Crucible Tool Steel, 6 $\frac{1}{2}$ ¢ @ 7¢; do., Spring, 4¢; do., Machinery, 4 $\frac{1}{2}$ ¢ @ 5¢; Bessemer Spring Steel, 2.50¢; do., Machinery, 2.40¢ @ 2.50¢; Toe Calk, 2 $\frac{1}{2}$ ¢; Tire, 2.20¢; Steel Bars, 1.80¢ @ 1.90¢ rates, full extras.

**Barb Wire.**—Painted is quoted at \$2.50 @ \$2.85, and Galvanized at \$3.35 @ \$3.40 for large orders, f.o.b. at makers' mill. As noted in our report of a week ago, this interest is now in a syndicate recently formed, with ten general agencies throughout the country, with headquarters at Chicago. It will be known as the Columbia Patent Company.

**Wire Rods.**—There have been no sales reported here for some weeks, in the absence of which we quote nominally at \$36 @ \$36.50, cash, at makers' mill.

**Steel Rails.**—This important interest continues quiet, while the price remains unchanged at \$30, f.o.b. at makers' mill.

**Railway Track Supplies.**—There is a continued good demand reported; no change in prices. Spikes, 2.15¢, 30 days; Splice Bars, 1.75¢ @ 1.85¢; Track Bolts, 2.75¢ @ 2.85¢ with Square and Hexagon Nuts.

**Old Material.**—There is a fair business and prices are firmer. Sales at \$19 @ \$19.50, net ton, for No. 1 Railroad Wrought; \$13.75, gross, for Cast Scrap; \$11.50, gross, for Cast Borings; \$16.50 @ \$17, gross, for Old Car Wheels; Steel Bloom and Rail Ends, \$17.50, gross.

**Connellsville Coke.**—There is a continued good degree of activity, but no change in prices.

## Cincinnati.

(By Telegraph.)

Office of The Iron Age, Fourth and Main Sts.,  
CINCINNATI, August 5, 1891.

**Pig Iron.**—The dullness seems to become intensified as the season advances, and the prices which were accepted *sub rosa* are now openly proclaimed, and sellers are only too glad of an opportunity to fill orders, and are willing to grant any delivery required. No large sales have been made during the week, but some Gray Forge in moderate quantities was sold at \$9.75 at the furnace, and Mottled at \$9.25, extending three months into next year. Ohio Softeners have sold to a fair extent to points east of Pittsburgh. Southern No. 1 Foundry is scarce and is well sold up, and there is no great excess of No. 2 on the market, but there is enough for the current demand. There is little movement in Charcoal Iron, but it is not urgently offered. There are no evidences of any material enlargement in the consumption of Pig Iron, and while there is insistence upon prompt delivery on existing contracts, it is rather because of apprehension that cars will be scarce later in the season than from any present need of Iron. In fact, some consumers are pleading for delay in receiving Iron which is coming to them. Many buyers are absent on vacations, and not much purchasing can be expected. All admit that good crops, which are now for the most part assured, will tend to enlarge general business, and that the Iron trade will share in the benefits, but it seems a long time to wait for this recuperation. Quotations may now be made as follows:

Foundry.	
Southern Coke, No. 1.....	\$14.75 @ \$15.00
Southern Coke, No. 2.....	13.50 @ 13.75
Southern Coke, No. 3.....	13.00 @ 13.25
Ohio Soft Stone Coal, No. 1.....	16.50 @ 17.00
Ohio Soft Stone Coal, No. 2.....	15.50 @ 16.50
Mahoning and Shenango Valley.....	17.00 @ 17.50
Hanging Rock Charcoal, No. 1.....	20.00 @ 21.00
Hanging Rock Charcoal, No. 2.....	19.00 @ 20.00
Tennessee and Alabama Charcoal, No. 1.....	16.00 @ 17.00
Tennessee and Alabama Charcoal, No. 2.....	15.00 @ 16.00
Forge.	
Gray Forge.....	12.50 @ 12.75
Mottled Neutral Coke.....	12.00 @ 12.25
Car Wheel and Malleable Irons.	
Standard Southern Car Wheel.....	19.25 @ 19.75
Hanging Rock, old Blast.....	25.00 @ 26.00
Lake Superior Car Wheel and Mal- leable.....	18.00 @ 18.50

## Cleveland.

CLEVELAND, August 3, 1891.

**Iron Ore.**—There is a lull in the market just now. Lake freights are advancing and mine owners do not see their way clear in letting go any more of their prospective output at present prices. On the other hand, the furnacemen are even more unwilling to listen to any talk of advancing prices until something in the condition of the Iron market will warrant them in paying the increased price. During the week just closed the freight rate from Escanaba to Lake Erie ports advanced to 85¢ @ 90¢; the Marquette rate to \$1.10 and the rate from Ashland and Two Harbors to \$1.15 @ \$1.20. With the quotations for Ore from \$1.25 to \$1.65 below last season's prices the dealers hesitate about closing any new bargains. The most interesting feature of the situation is the rapid manner in which the Ore heaped upon the docks at Cleveland, Fairport and Ashtabula is being rushed forward to the furnaces, from 50,000 to 75,000 tons per week going away from this port alone. During the week a few thousand tons of Gogebic Bessemer have been sold at about \$4.60, f.o.b. cars lower lake ports, and a small amount of No. 1 Specular and Magnetic Ore at \$6. We hear of scattering sales of soft non-Bessemer at \$3.50, f.o.b. cars Cleveland.

There is some inquiry for Bessemer Ore from Eastern furnacemen, but dealers with scarcely an exception report little or no business.

**Pig Iron.**—There have been no changes of importance beyond a slightly weaker feeling as regards Bessemer Iron. Furnacemen seem confident of an improvement in the market after August 15, and declare themselves in no mood to solicit trade just at present. No sales of consequence are reported, but the following are the local quotations:

Nos. 1 to 6 Lake Superior Charcoal	\$18.50 @ \$19.00
Nos. 1, 2 and 3 Bessemer, per ton.....	16.25 @ 16.75
No. 1 Strong Foundry, per ton.....	15.50 @ 16.00
No. 2 Strong Foundry, per ton.....	15.00 @ 15.50
No. 1 American Scotch, per ton.....	16.80 @ 17.00
No. 2 American Scotch, per ton.....	16.80 @ 16.85
No. 1 Soft Silvery, per ton.....	16.50 @ 17.50
Mahoning and Shenango Valley Neutral Mill Irons, per ton.....	14.80 @ 15.00
Mahoning and Shenango Valley Red Short Mills, per ton.....	15.00 @ 15.50

**Scrap.**—The market is a trifle stronger and the demand is fair. No. 1 Railroad Wrought is selling for \$19 @ \$19.25; Cast Scrap at \$13.50 and Wrought Turnings at \$13.25 @ \$13.50.

**Old Rails.**—A few sales are reported at \$22.50 @ \$22.75, but the market is neither very strong nor active.

**Manufactured Iron.**—The mills are well occupied with orders. A considerable amount of business is reported on the basis of 1.65¢ @ 1.70¢ for Common Bar from the mill.

**Nails.**—A somewhat limited business is reported, except for Wire Nails, for which there is a good demand.

## Louisville.

LOUISVILLE, KY., August 3, 1891.

**Pig Iron.**—The market has continued quiet, with but little buying, and during the first part of the week there were signs of weakness, Gray Forge being offered for five months' delivery on basis of \$9.75, Birmingham. Toward the close prices have been better, and Gray Forge has been held firmly at basis of \$10 @ \$10.25 by one or two of the leading furnaces, and some sales for favorite brands have been effected on this basis. Offerings on the part of some furnaces anxious to sell, however, continue at less than basis of \$10, with buyers for large amounts afraid to take hold, owing to fear of tight money. Producers, however, if they will hold firm to \$10.25, will be able to sell at this basis, as toward the close of the week there have been heavy sales made by manufacturers, one reported by a leading consumer that will require the purchase of about 14,000 tons. With the heavy crops business should become more active. Producers cannot afford to sell Iron at the prices prevailing, and as the stocks of Iron in consumers' hands are small they will soon have to pay more money. We quote for cash, f.o.b. cars, Louisville:

Southern Coke, No. 1 Foundry.....	\$14.50 @ \$15.00
Southern Coke, No. 2 Foundry.....	13.75 @ 14.25
Southern Coke, No. 3 Foundry.....	13.25 @ 13.75
Southern Coke, Gray Forge.....	12.75 @ 13.25
Southern Charcoal, No. 1 Foundry.....	16.00 @ 17.00
Southern Car Wheel.....	19.00 @ 20.00

## Detroit.

WILLIAM F. JARVIS & Co., Detroit, Mich., under date August 3, say: Had a stereotyped report of prices in our local market been prepared several weeks ago it certainly would have answered every purpose. There is really no change whatever to note from week to week. The extreme quietness that has pervaded the market in all branches except Lake Superior Charcoal continues, and now includes the exception noted. It is generally believed that a livelier demand will be very soon seen, but in the meantime

our furnaces are accumulating stocks which threaten to hold the market down at its present low ebb probably all of the present year at least. Shipments by lake of both Ore and Pig Iron are large, with a trifle better rates to the vessels. We repeat quotations, as follows:

Lake Superior Charcoal, all num- bers.....	\$18.00 @ \$18.50
Lake Superior Coke, Bessemer.....	17.75 @ 18.25
Ohio Blackband (40 per cent.).....	18.00 @ 18.25
Lake Superior Coke Foundry, all ore.....	17.50 @ 18.00
Southern No. 1.....	16.25 @ 16.50
Southern Gray Forge.....	14.00 @ 14.50
Jackson County (Ohio) Silvery.....	18.00 @ 18.50

## St. Louis.

OFFICE OF The Iron Age, 314 N. Sixth st.,  
ST. LOUIS, August 3, 1891.

**Pig Iron.**—The extreme dullness which has characterized this department continues almost unchanged. Some inquiries are received, but the prices that consumers are willing to pay are below what furnaces seem disposed to sell at, and as a consequence little business is transacted. The impression is gaining ground, however, that we are nearing the end of the dullness, and that we will shortly see a revival of trade. This judgment is based on the theory that while the sales of Pig Iron have been below the average, the consumption has kept up at a steady gait, and the stocks of Iron now on hand are lighter than they have been for some time. Furnaces are pretty well sold up, and while they are willing to sell at present prices for delivery during the balance of the year, it is difficult to get buyers to give orders of this character. Prices continue weak and it seems that this would be an opportune time to lay in a stock of Iron for winter consumption, but for some reason consumers refuse to be talked into buying beyond actual requirements. We quote as follows for cash, f.o.b. St. Louis:

Southern Coke, No. 1 Foundry.....	\$15.50 @ \$15.75
Southern Coke, No. 2 Foundry.....	14.50 @ 14.75
Southern Coke, No. 3 Foundry.....	13.75 @ 14.00
Gray Forge.....	13.00 @ 13.25
Southern Charcoal, No. 1 Foundry.....	17.00 @ 17.50
Southern Charcoal, No. 2 Foundry.....	16.50 @ 16.75
Missouri Charcoal, No. 1 Foundry.....	15.50 @ 16.00
Missouri Charcoal, No. 2 Foundry.....	15.00 @ 15.50
Ohio Softeners.....	17.50 @ 18.75

**Bar Iron.**—There is not much doing in this department in the way of new business. Mills have a fair amount of work on their books, however, and are not worried about the immediate future. We quote as follows: From 1.70¢ to 1.75¢ from mill, delivered on cars at East St. Louis. Lots from store command 1.82½¢ @ 187½¢, according to quantity.

**Barb Wire.**—The demand for Barb Wire is reported to be improving. Jobbers are large buyers at the present prices, and the outlook for an early advance is considered favorable. We quote as follows: Painted, from mill, 2.75¢; Galvanized, 3.30¢.

**Wire Nails.**—In sympathy with Barb Wire, Nails are moving freely. Mills are not pushing sales to any extent, as the opinion is gaining ground that the present prices will shortly be withdrawn and a higher range of values be substituted. Carload lots from mill command \$3.15. Small lots from store are quoted at \$2.25.

(By Telegraph.)

The Pig Lead market is quiet and there is but little business being transacted. What few sales are made are in small quantities for immediate delivery at 4.20¢. In Spelter the dullness noted in last week's report continues. The demand is only moderate, and orders are filled on the basis of from 4.85¢ to 4.90¢.



## New York.

Office of The Iron Age, 96-102 Reade street, }  
NEW YORK, August 5, 1891. }

**American Pig.**—In Mill Iron there has been some indication of weakness, and there have been again some offerings of Southern warrant iron of a leading Birmingham brand. Some of the Southern makers claim to be well sold up. A well-known authority in the iron trade, who has lately made a tour through the Southern States, states that a number of furnaces in the Birmingham district are in a bad way for both Ore and Coke, and that there is some probability that some of them will be forced into idleness from that cause. An interesting statement has been made to us concerning the operations of the Thomas Iron Company by its president, B. G. Clarke. According to the semi-annual balance sheet, which by the way shows a very handsome profit, the sales and deliveries of the company during the first six months were 91,712 tons, while the make during that period was 78,456 tons. We question whether other makers of standard Pig Iron can show such a record, and are inclined to regard it as the "exception which proves the rule." Attention may be called to the fact that with the heavier movement of freight, consumers, notably of Southern Iron, will have some trouble in the near future with delays in deliveries. Consumers generally are getting more and more into the habit of carrying very little stock, and of relying upon quick shipment on the part of the furnace companies. Northern brands are quoted at \$16.75 @ \$18 for No. 1; \$16 @ \$16.50 for No. 2, and \$14 @ \$14.50 for Gray Forge. Southern Irons sell at \$16 @ \$17 for No. 1; \$15.25 @ \$16 for No. 2; \$15.50 @ \$16 for No. 1 Soft, and \$14 @ \$14.50 for Gray Forge.

**Spiegeleisen and Ferromanganese.**—Only a jobbing trade is being done. We quote Spiegeleisen \$27.50 @ \$28 and Ferromanganese \$63.50 @ \$64.

**Billets and Rods.**—While reports come from the West of the beginning of another era of cutting of prices on Billets, the market in this section is dull. We quote, Wire Rods, which are very quiet, \$38 @ \$38.50, at tidewater.

**Steel Rails.**—The market is exceedingly dull, and the outlook continues very discouraging. Only one sale of 1000 tons for a Texas road is reported, and there are mills whose representatives here have not closed a transaction for many weeks. Nor are the reports of Western makers represented in this market any more encouraging. Manufacturers are speculating as to the future. Some hope for a revival in the fall. Others believe that the spring business, which is expected to reflect the results of the crops, will not come upon the market until February or March of next year. Thus far the outlook for fall and winter work is very discouraging indeed, and some makers have practically made up their minds that they have little to expect. Railroad managers have no inducement to place orders for distant delivery, even if they saw their way clear to pay for the Rails. They know that the price is not likely to advance materially. The good crops will bring the roads money, but the first object to which many of them must apply it will be to pay back what they have borrowed. It is pointed out, too, that railroad managers are not likely to make extensive renewals while their roads are taxed by traffic. Quotations remain unchanged at \$30.75 @ \$31, at tidewater. The Lackawanna Iron and Steel Company are now running half time. Sparrows Point has started up, and the Steelton Works have practically ceased making Rails.

**Rail Fastenings.**—The market is very quiet. We quote Spikes, 2.15¢ @ 2.25¢, delivered; Bolts and Nuts, 2.70¢ @ 2.80¢, and Fish Plates, 1.75¢ @ 1.80¢.

**Manufactured Iron and Steel.**—Local mills report quite a satisfactory amount of work so far as architectural specifications are concerned. Bridge builders continue to keep prices low. The distribution of work is very irregular, some shops being crowded while others are very hungry for orders. Boilermakers are moderately busy. Of the six ships referred to lately the Newport News yard secured four, Union of San Francisco, one, and Roach, one. It is reported that the Plates for the latter two are practically placed. We quote: Angles, 1.95¢ @ 2.10¢; Sheared Plates, 1.95¢ @ 2.25¢; Tees, 2.45¢ @ 2.75¢, and Beams and Channels, 3.1¢, on dock. Steel Plates are 2¢ @ 2.15¢ for Tank; 2.3¢ @ 2.6¢ for Shell, and 2.5¢ @ 2.7¢ for Flange, on dock. Bars are 1.7¢ @ 1.9¢, on dock. Links and Pins have sold lately at a shade under 2¢, delivered.

**Swedish Rivet Rods.**—Foreign advices report an advancing market, and \$57½ @ \$58 is now named here.

**Old Material.**—A lot of 200 tons of old Steel Rails has been sold at \$17, delivered.

## Financial.

The extraordinary crop outlook and the assurance of remunerative prices for all the exportable surplus, whether it be wheat or corn, is the single paramount factor at the present time. The prospective clamor for food in Europe will find an early response from all over the great West. General Traffic Manager Wegg of the Northern Pacific Railroad says: "The spring wheat promise is so immense that the Northwestern roads will be at their wits' ends for rolling stock." Minnesota and Dakota alone promise not less than 110,000,000 bushels, and Kansas is down for 250,000,000 bushels of corn. Respecting the forward movement L. H. Taylor & Co. say in their circular: "Attention is being more generally directed to the heavy engagements of wheat for almost immediate delivery for export. A very large proportion of our anticipated exports of 160,000,000 to 200,000,000 bushels of wheat will go before January 1." Already rates of freight are advancing from Chicago to the seaboard, and thence to the port of destination. In New York accommodation for grain via the steam lines is pretty well absorbed for August, so far as the English ports are concerned, but there is nothing to prevent agents from chartering outside steamers if the demand becomes brisk. The same is true of Baltimore, and enormous shipments will be made via New Orleans and Galveston. The threatened farmers' "wheat corner" is already a myth. Sweden, Finland and Norway, which heretofore have depended on Russia for supplies, now look to the United States. According to the French National Millers' Association France will have to purchase abroad wheat to the extent of about \$200,000,000. New York operators report that last week's purchases of wheat by exporters ran up to about 6,000,000 bushels—all deliveries here and at outports—which quantity was exceptionally large. Rye made a further sharp advance on the probable large export requirements. In the rivalry for eastbound tonnage from Chicago, the lake lines again eclipsed their rail competitors by rolling up a total of 78,752 tons. Inquiry respecting the failure of Abraham Backer, dealer in commercial paper, with liabilities reported at something like \$4,000,000, disclosed no evidence of disturbance among local bankers. He had large connections in the South and Southwest. Report says the Interstate

Commerce Commission will bring proceedings against certain trunk lines that have been paying rebates on Western freight.

The stock market was active and lower. Sugar refining was very slightly improved by Judge Cullen's decision ordering the dissolution of the Brooklyn Sugar refining Company. There was vigorous raiding at intervals of St. Paul, Rock Island, Chicago, Burlington and Quincy, Richmond Terminal, Louisville and Nashville, Sugar Refiners and other specialties, accompanied by disquieting rumors. On Friday the bears began to cover short contracts, and after renewing their assault on Saturday morning the market was suddenly turned upward, largely due to the increased earnings and to the favorable news regarding the crops. Union Pacific sold lower than it did in the November panic. On Monday dullness was again the feature, and on Tuesday the market was weaker all round.

Government and State bonds were alike entirely neglected, and the only change in quotations was the recovery of interest on the registered 4½s. Quotations as follows:

U. S. 4½s, 1891, registered.....	100½
U. S. 4½s, 1891, coupon.....	100½
U. S. 4s, 1907, registered.....	116½
U. S. 4s, 1907, coupon.....	116½
U. S. currency 6s, 1896.....	110

The redemption of 4½ bonds will not begin until September 2, 1891, the date of their maturity.

Money has a hardening tendency, but is in good supply both in New York and at interior points. Time loans are difficult to obtain, causing more or less embarrassment in mercantile circles. Banks accommodate their customers so far as practicable. Quotations for paper are nominal on the basis of 6%. Some loans are accompanied by a clause guaranteeing payment in gold. In Boston all loans at the Clearing House were marked up to 6%. It was intimated that any decided improvement in the bond market would be quickly followed by orders from the granger roads for steel rails and additional rolling stock.

The bank statement showed a loss of \$642,200 cash and of \$228,975 in surplus reserve, leaving this item at \$19,481,850. Exchange was irregular, but the fall in rates was not important, and the market closed steady at \$4.85½ @ \$4.87½.

The posted rates for bankers' sterling are \$4.85½ @ \$4.87½. The market is weaker.

At a meeting held at Baring, Magoun & Co.'s offices on Friday it was decided to issue a formal circular, to be signed by the leading exchange buyers of New York, in which these bankers state "they will give a very decided preference to cotton bills of exchange having attached to them the bills of lading, unaltered, which have been approved of by the Liverpool Cotton Conference."

## Imports.

## Hardware, Machinery, &amp;c.

Cahart & Blanchard, Mach'y, cs., 10  
Bartholet, J., Mach'y, cs., 9  
Baker, Hermann & Co., Anvils, 160; Arms, cs., 30;  
Hardware, cs., 6; Mds., pgs., 8  
Butler, Richards & Co., Mach'y, cs., 30  
Downing, R. F. & Co., Bicycles, pgs., 60; Mach'y, pgs., 11  
Falk, J. E., Mach'y, cs., 50  
Field, Alfred & Co., Arms, cs., 75  
Folsom, H. & D., Arms, cs., 11  
Hensel, Bruckman & Co., Mach'y, pgs., 12  
Hamacher, S. & Co., Nails, cs., 30  
Hampton, J. W. & Co., Gun Barrels, cs., 25  
Hormann, Schutte & Co., Arms, cs., 4  
Hartley & Graham, Arms, cs., 20  
Lau, J. H., & Co., Arms, cs., 32  
Meacham Arms Company, Arms, cs., 21  
Pitt, Forwood & Co., Mach'y, cs., 20  
Richard, C. B., & Co., Mach'y, cs., 7  
Sanderson & Son, Mach'y, pgs., 10  
Schoverling, D. & G., Arms, cs., 5  
Shirt, W. G. & Co., Curry Combs, cs., 6  
Singer Mfg. Company, Machines, cs., 30  
Tryon, E. K. & Co., Gun Barrels, cs., 4  
Werlemann, H., Arms, cs., 18  
Wiebusch & Huger, Arms, cs., 22; Chains, cs., 241  
Wyman, Chas. & Co., Arms, cs., 30  
Order—Chains, cs., 13; Mach'y, pcs. and pgs., 21; Foot Baths, bdls., 63; Hardware, cs., 2

## Coal Market.

The Anthracite Coal market is artificially held up by mutual understanding since the meeting of presidents a few days ago, so that while prices may be firm the general situation may be weak. It will be difficult to speak more definitely until effects have more fully developed. The presidents last week agreed to mine not over 3,000,000 tons in August, their single aim being to relieve the market of pressure from surplus Coal, and thus make it possible to realize better prices. Temporarily, at least, the scheme is a success, for it would be perhaps impossible to buy company Coal just now at less than the July circular, which is quite different from buying Coal at May prices, as was done three weeks ago. It is true that Coal has been sold during the week at June prices, but it was held by a former agreement with middlemen on orders not yet filled. Quotations must, therefore, be advanced, as follows:

	Broken.	Egg.	Stova.	Chest-nut.
Lehigh.....	\$3.90	\$4.00	\$4.05	\$3.75
Free.....	3.65	3.85	4.05	3.75

—f.o.b., less commission to middlemen. Egg of all kinds is scarce, particularly Lehigh. A few days will be sufficient to show whether the new programme can be carried out, but stress is placed on the fact that presidents have spoken rather than agents. One of the strongest points for the operators is the fact that much apprehension is felt in the West that a scarcity of cars, when the grain movement acquires full volume, will render Coal transportation difficult. In anticipation of this possible event the Western trade will take Coal out from the tidewater market for some time to come. Therefore, the market is supposed to be well in control—July, the worst month, having passed.

A Pittston dispatch says the Plymouth Coal Company, of which John C. Haddock of New York is president, have completed a tunnel from the Dodson to the Ross mine, through 382 feet of rock, disclosing 8 feet of clear Coal, the most valuable find in years.

A fire in the Lehigh Coal Company's colliery near Ashland did considerable damage.

Maryland papers speak of the reopening of the Chesapeake and Ohio Canal as an event of supreme importance.

The Mount Lookout Colliery has just commenced operations, with 2000 tons capacity per day. The breaker is one of the largest in the entire valley, being 154 feet in height, 93 feet in width and 358 feet in length. The owners of this gigantic plant are Simpson & Watkins of Scranton, Pa.

Vessel rates to Boston are lower than for a long time past. Production for the week ended July 25 was 835,000 tons, a decrease of 54,000 tons compared with the previous week, but an increase of 64,800 tons compared with the same week last year. Since January 1 the increase is 2,765,000 tons. The only decrease now reported is in the Lehigh region, while Wyoming is quite active.

In West Virginia the total capital invested in Coal production during the census year, according to the bulletin just issued, was \$10,508,050, in Kentucky \$6,581,000 and in Tennessee \$4,362,000.

The United States District Attorney at Buffalo is said to be preparing a case against the Buffalo Coal syndicate, under the new Anti-Trust law.

Mary Furnace of the Ohio Iron and Steel Company of Lowellville, Ohio, has eclipsed its best record. In July the furnace made 4780 tons of its special high-silicon Ohio Scotch foundry iron, the percentage of No. 1 being 92½ per cent. This is due to improvements made during the recent shut down.

## Metal Market.

**Pig Tin.**—The spot price for Pig Tin has receded about ½¢ during the week. Sales have been made at 20.05¢, net cash, for August delivery, and in one instance at as low as 20¢, with seller's right to double. Slow trade demand and very moderate purchases by consumers have contributed in some degree to the downward movement, but speculative maneuvering has figured more prominently than anything else, and prospective heavy arrivals here and in England during the current month seem to have been the basis of speculators' operations. It is figured out that at least 1000 tons should arrive here during the month and the quantity due in London is estimated at upward of 1500 tons, a total amount that is considerably in excess of the probable requirements. It is believed, also, that the stock on the spot here is larger than estimated by the semi-official statisticians and that some holders are anxious to realize in view of the sluggish condition of the market. At the Exchange there were sales Wednesday of 70 tons at 20.10¢, but the market closed rather weaker. The Metal Exchange statistics of movement and stocks are as follows:

	June, 1891.	July, 1891.	July, 1890.
Shipments.	Tons.	Tons.	Tons.
Straits to Great Britain.....	2,050	750	675
Straits to America.....	400	1,100	375
Straits to Continent.....	150	75	275

Total Straits.....	2,600	1,925	1,325
--------------------	-------	-------	-------

Australia to Great Britain.....	325	350	350
Australia to America.....	50	50	50

Total Australia.....	375	400	400
----------------------	-----	-----	-----

Total shipments.....	2,975	2,322	1,725
----------------------	-------	-------	-------

Deliveries from London.....	1,470	1,200	1,800
-----------------------------	-------	-------	-------

Deliveries from Holland.....	900	600	750
------------------------------	-----	-----	-----

Total deliveries.....	2,370	1,950	2,550
-----------------------	-------	-------	-------

Of which shipped to America.....	260	410	400
----------------------------------	-----	-----	-----

	July 1, 1891.	Aug. 1, 1891.	Aug. 1, 1890.
--	---------------	---------------	---------------

Foreign Tin in London.....	2,335	3,422	3,489
----------------------------	-------	-------	-------

Second hands in Holland.....	1,200	1,790	1,810
------------------------------	-------	-------	-------

Spot stock in America, estimated.....	1,700	1,300	1,350
---------------------------------------	-------	-------	-------

Total spot stock.....	5,235	6,532	7,649
-----------------------	-------	-------	-------

Afloat for Great Britain.....	3,500	2,280	2,459
-------------------------------	-------	-------	-------

Afloat for Holland.....	1,960	1,290	1,020
-------------------------	-------	-------	-------

Afloat for America.....	*1,400	2,100	1,730
-------------------------	--------	-------	-------

Total afloat.....	6,860	5,670	5,209
-------------------	-------	-------	-------

Stocked in Straits.....	.....	.....	.....
-------------------------	-------	-------	-------

Stocked in Australia.....	.....	.....	.....
---------------------------	-------	-------	-------

Total visible supply.....	12,095	12,192	12,858
---------------------------	--------	--------	--------

Month's shipments to Continent.....	150	75	275
-------------------------------------	-----	----	-----

*Includes 275 tons at dock.			
-----------------------------	--	--	--

**Copper.**—The market is in as unsatisfactory shape as it was a week ago—worse if anything. The record of exports shows that a considerable amount of Copper is still going to Europe in delivery on old orders and on consignment, but new orders from foreign markets are few and far between, and the home trade demand is exceedingly quiet. Exports thus far, it is figured out, have not been more than equal to the surplus on hand at the beginning of the year, and as home consumers have purchased sparingly, the inference that the Lake Superior companies accumulated considerable Copper would appear to be quite a reasonable one. The downward tendency of values in the face of persistent effort to disguise the real situation is also pointed to as significant in this connection. At present 12½¢ is named as the asking price for Lake Superior Ingot. Some parcels have been let go at 1½¢ @ 1½¢ less. Bids of 12¢ were refused until Wednesday, when a few small parcels were sold at that. Arizona is held at the same price, but there is very little in stock and buyers are extremely

scarce. Casting brands have been dealt out in a small way at 11½¢, which price is evidently the top of the market. The statistical position in Europe is posted as follows on the Metal Exchange:

	July 1, 1891.	July 16, 1890.	Aug. 1, 1891.
--	---------------	----------------	---------------

Stocks, in gross tons.			
------------------------	--	--	--

Chili Bars, Liverpool and Swansea.....	18,120	18,190	17,900
--	--------	--------	--------

Fine Copper, Liverpool and Swansea.....	11,900	11,940	12,360
---	--------	--------	--------

Foreign Copper at London.....	7,800	8,100	8,400
-------------------------------	-------	-------	-------

Chili Bars in France.....	9,606	9,516	9,821
---------------------------	-------	-------	-------

Other stuff in France.....	7,000	6,900	6,900
----------------------------	-------	-------	-------

Totals.....	54,486	54,646	55,381
-------------	--------	--------	--------

Afloat from Chili.....	2,000	2,600	2,900
------------------------	-------	-------	-------

Afloat from Australia.....	300	600	600
----------------------------	-----	-----	-----

Afloat from England to Continent.....	.....	.....	.....
---------------------------------------	-------	-------	-------

Totals.....	57,286	57,846	58,881
-------------	--------	--------	--------

	June, 1891.	July, 1st half, 1891.	July, 1891.
--	-------------	-----------------------	-------------

Receipts and deliveries.			
--------------------------	--	--	--

Chili charters for month.....	1,400	*500	1,700
-------------------------------	-------	------	-------

Total supplies, England and France.....	11,000	.....	9,400
---	--------	-------	-------

Of which from North America.....	2,500	.....	4,000
----------------------------------	-------	-------	-------

Deliveries, England and France.....	12,000	.....	8,000
-------------------------------------	--------	-------	-------

* Estimated.			
--------------	--	--	--

**Pig Lead.**—Business has been of moderate proportions, but despite that fact surface indications suggest a rather firmer undertone to the market. Spot stock is not offered as urgently now as it was a week ago, and local sellers' figures are closer to those that have been asked by smelters for some little time past. At present there are buyers of carload lots at 4.40¢ for delivery during the current month, and sellers at less than 4.45¢ are very few. The demand is hesitant, however, and chiefly for moderate quantities.

**Spelter.**—Brass manufacturers are buying very indifferently. Purchases by Galvanizers are also on a moderate scale, and from other sources there is merely a routine demand. The metal is offered by smelters with apparent reserve, and prices are held at about 5.10¢ for Prime Western. Some of the less popular makes may, however, be secured at a lower price.

**Antimony.**—The market is still unsettled, with barely the average business passing. Hallett's quoted at 11¢, LX at 12¢, and Cookson's at 12½¢ @ 12½¢ in wholesale quantities.

**Tin Plate.**—There has been no important movement on the part of either buyers or sellers, and except that cheap lots seem to be gradually disappearing there is no new feature. Business is still of moderate volume. We quote: Coke

Tins—Penlan grade, IC, 14 x 20, \$5.25 @ \$5.30; J. B. grade, do., \$5.40 @ \$5.45; Bessemer do., \$5.35 @ \$5.40; Siemens Steel, \$5.50. Stamping Plates—Bessemer Steel, Coke finish, IC basis, \$5.75; Siemens Steel, IC basis, \$5.85 @ \$6; IX basis, \$6.85 @ \$7. IC Charcoals—Melyn grade, \$6.50; for each additional X add \$1.50; Allaway grade, \$6; Grange grade, \$6; for each additional X add \$1. Charcoal Terns—Worcester, 14 x 20, \$5.75; do., 20 x 28, \$11.40; M. F., 14 x 20, \$7.50; do., 20 x 28, \$15.50; Dean, 14 x 20, \$5.25; do., 20 x 28, \$10.50; D. R. D. grade, 14 x 20, \$4.90 @ \$4.95; do., 20 x 28, \$10; Mansel, 14 x 20, \$5.12½; do., 20 x 28, \$10.10; Alyn, 14 x 20, \$5.15; do., 20 x 28, \$10.30; Dyffryn, 14 x 20, scarce; do., 20 x 28, \$10.75. Wasters—S. T. P. grade, 14 x 20, \$4.80; do., 20 x 28, \$9.70; Abercarne grade, 14 x 20, \$4.80; do., 20 x 28, \$9.60.

**New York Metal Exchange.** The following sales are reported:

THURSDAY, July 30.

25,000 lb. Copper, August.....12.30¢

25 tons Tin, August.....20.15¢

(Seller's right to double.)

25 tons Tin, August.....20.20¢

FRIDAY, July 31.

10 tons Tin, October.....20.20¢

50 tons Tin, August.....20.15¢

10 tons Tin, August.....20.10¢



## British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]  
LONDON, WEDNESDAY, August 5, 1891.

Pig Iron warrant speculation has been exceedingly slow and the shipping demand for Iron also continues restricted. The bulk of outstanding Scotch Warrants seems to be closely under control and prices therefore hold quite firm, but Cleveland has dropped off to 40/ and Hematite to 48/9. Stocks in Connal's stores at present amount to 504,000 tons Scotch and 155,000 tons Cleveland Iron. Latest sales of warrants were at 47/ for Scotch, 40/ for Cleveland and 49/3 for Hematite.

The Tin market has been quiet and prices have averaged lower. Slow demand and expected liberal arrivals cause holders to yield, although stocks on the spot are extremely small.

Heavy selling by the "bear" interest caused a decline in Copper prices early in the week, but withdrawal of that pressure and covering of short accounts led to a reaction under which a rise to £52. 2/6 for prompts took place. The consumptive demand has been good. Recent sales of furnace material include 450 tons Montana at 10/; 100 tons ditto at 10/1½; 300 tons Montana argentiferous on p. t.; 300 tons ditto at 10/3. Present European stock is 12,535 tons less than that on hand six months ago, but an increase of 802 tons last month is shown. Chili charters in June estimated at 1500 tons.

Tin Plate market has been quiet but firm, with some buying of special sizes for America, and more inquiry for future deliveries noted.

**Scotch Pig Iron.**—Market continues very dull and prices tend in buyers' favor:

No. 1 Coltness, f.o.b. Glasgow.....	60/
No. 1 Summerlee, " " " " " "	58/
No. 1 Gartsherrie, " " " " " "	58/
No. 1 Langloan, " " " " " "	60/
No. 1 Carnbroe, " " " " " "	49/
No. 1 Shotts, " " at Leith.....	60/
No. 1 Glengarnock, " Ardrossan.....	59/
No. 1 Dalmeilington, " " " " " "	51/
No. 1 Eglinton, " " " " " "	50/

Steamer freights, Glasgow to New York, 2/; Liverpool to New York, 10/.

**Cleveland Pig.**—The market is slow and prices are barely steady at 40/3 @ 40/6 for No. 3 Middlesborough, f.o.b.

**Bessemer Pig.**—Sales are light, and makers now offer at 50/6 for West Coast brands, Nos. 1, 2 and 3, f.o.b. shipping point.

**Spiegeleisen.**—There is a fair movement and prices are steady. English 20% quoted at 95/, f.o.b. shipping port.

**Steel Rails.**—The situation is wholly unchanged and prices remain as before. Heavy sections quoted £4. 5/, and light sections £4. 15/ @ £5. 15/, f.o.b. at N. W. England shipping point.

**Steel Blooms.**—Sales are light and chiefly at old prices. Makers quote £4. 5/ for 7 x 7, f.o.b. at N. W. England shipping point.

**Steel Billets.**—Only a moderate business passing and prices barely steady. Bessemer, 2½ x 2½ inches, quoted at £4. 7/6 @ £4. 10/, f.o.b. at N. W. England shipping point.

**Steel Slabs.**—The market is dull and unchanged. Bessemer quoted at £4. 7/6 @ £4. 10/, f.o.b. at N. W. England shipping point.

**Old Iron Rails.**—Business still and values are unchanged. Tees quoted at £2. 17/6 and Double Heads £3 @ £3. 2/6, f.o.b.

**Scrap Iron.**—The market remains quiet, with prices steady. Heavy Wrought Iron quoted at £2. 10/ @ £2. 12/6, f.o.b.

**Crop Ends.**—Very little movement and few inquiries. Bessemer quoted at £2. 15/ @ £2. 17/6, f.o.b.

**Tin Plate.**—There has been no change. We quote, f.o.b. Liverpool:

1C Charcoal, Alloway grade.....	15/3 @ 15/6
1C Bessemer Steel, Coke finish.....	14/ @ 14/3
1C Siemens " " " " " " " "	14/3 @ 14/6
1C Coke, B. V. grade.....	13/3 @ 13/6
Charcoal Terne, Dean grade.....	13/3 @ 13/9

**Manufactured Iron.**—Business is still on a moderate scale and at former prices. We quote, f.o.b. Liverpool:

Staff, Marked Bars.....	£ s. d. @ 8 10 0
" Common " " " " " " " "	6 10 0 @ 6 12 6
Staff, Bl'k Sheet, singles.....	@ 7 2 6
Welsh Bars (f.o.b. Wales).....	5 10 0 @ 5 12 6

**Tin.**—Market closes barely steady, but moderately active. Straits quoted at £90. 17/6, spot, and £91. 2/6 for three months' futures.

**Copper.**—The market closes firm, with quite good demand. Merchant Bars quoted at £52. 12/6, spot, and £53. 2/6, three months' futures. Best Selected, £57.

**Spelter.**—Business slow but prices steadier at £23. 12/6 for ordinary Sillesian.

**Lead.**—Demand very slow and prices easy at £12. 5/ for Soft Spanish.

## Paints and Colors.

*It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.*

Quite a good-sized delegation of Southern buyers have been in town during the week, but, apart from making a formal call upon the leading Paint firms, those visitors have done nothing to speak of in a business way. After a brief sojourn at the summer resorts they will probably be heard from, along with others due this month, and the probabilities are that business will shortly become more active. For the present, however, there is merely a hand-to-mouth business to report. Weather conditions have checked outdoor work in this and immediate vicinity, thereby curtailing the consumption of Paints more or less; and in the absence of incentive for more liberal action retailers have purchased very little stock in excess of imperative requirements. In values there have been few and only unimportant changes. The Linseed Oil situation is still a disturbing factor, more particularly as bearing upon prices of Oil Colors and various lines of Mixed Paints; and, while there is a slight evidence of a tendency on the part of some of the belligerents to be less hostile, the situation is still aggravating to both manufacturers and distributors. Other-wise matters are in very fair shape and generally favorable.

**White Lead.**—More or less interest in the reorganization of the National Lead Trust has been manifested by handlers of the productions of the various corrodors, but nothing is discovered that would have any bearing upon the market for the leading pigment. The condition of the market for crude material is also closely watched, but in that direction there are no signs of any movement calculated to bring about a modification of corrodors' prices. Competition by manufacturers of Mixed Leads differs but little from what has been general for some time past. As natural under such conditions, buyers pursue a conservative course, and the best that can be said of current business is that is of about the average volume for the season.

**Zincs.**—New orders for American Oxide are coming forward rather slowly at the present time, but deliveries on old contracts still absorb so much of the current output that there is scarcely any accumulation, and manufacturers adhere to the former line of prices. Advices by cable state that several manufacturers of foreign

Zincs have advanced their prices, but thus far no changes have been announced here and it is considered unlikely that any will be made unless the demand later on should prove to be heavy. Home manufacturers are making preparations for a larger output in the near future. That movement will, doubtless, act as a check upon advancing prices for the foreign product in this market.

**Colors.**—In dry Colors the only feature is an advance in prices of most grades of Ultramarine Blue to the extent of about 10%. In other dry Colors no changes have taken place. Oil Colors are selling at somewhat irregular prices, and the market seems likely to remain unsteady until the Linseed Oil situation becomes more clearly defined.

**Miscellaneous.**—The condition of the market for Block Chalk is unchanged. The same may be said of Whiting and Paris White, prices of which are still irregular. Putty is still unsettled Barytes and Clays in general are selling at old prices, but rather slowly.

## Oils and Turpentine.

In this line there has been a very fair trade, yet nothing comes to notice that varies a great deal from the usual experience at this season of the year. The contest between the conflicting interests in the Linseed Oil line is still a matter upon which attention is riveted by dealers handling the commodity, and the movements of the Menhaden Oil combination are a study for the Fish Oil trade. Neither interest has made any alarming move during the past week, however, and buyers are moving in their accustomed way. Outside of the departments specified there are no special features.

**Linseed Oil.**—Western brands have been sold, in carload lots, at as low as 36¢ here, which price is the lowest of the season up to date. Whether further orders would be taken at that rate is problematical. Current report has it that 37¢ is now bottom price and that sellers are not as anxious as they were a week or ten days ago for orders. City crushers have made no further changes in their prices, but it is an open secret that orders have been taken with a guarantee of protection to buyers in the event of quotations being reduced. Considerable Oil has been sold, but the distribution, to all accounts, is hardly up to the average for the season.

**Cotton-Seed Oil.**—Contracts have been made for a few hundred barrels of new crop crude Oil at 30¢ per gallon, October delivery. Additional quantities were subsequently offered at the same price, without attracting the attention of buyers. Exporters have taken about 1000 barrels of refined Oil at prices not made public, but otherwise only small transactions come to notice, the majority of which were at practically former prices. At this writing there is a very fair demand from the home trade and a slightly firmer tone to the market.

**Menhaden Oil.**—The combine have disposed of their entire product of crude Oil to August 1, and have set the price for new business at 30¢ per gallon. A moderate quantity of outside Oil may be had at 1¢ @ 2¢ less, but even at 28¢ buyers are disinclined to take hold. The future of the market depends in a good measure upon the fishing, which during the past ten days has been rather poor. Higher prices are quoted for Pressed and Bleached Oils, but these are still relatively lower than present cost of the crude product.

**Sperm and Whale Oils.**—For crude Whale Oil 50¢ is named as the nominal price, and 71¢ is considered a fair reflection of present value of crude Sperm. There is very little movement in either line. The manufactured products are moving off quietly in a jobbing way at old prices.

# HARDWARE.

## Condition of Trade.

**T**HE HARDWARE market presents few new features since our report of last week. Advices from different parts of the country indicate that business for the past month may be favorably compared with the same period last year, and that while orders have not been large, they have been quite numerous. There is still a fair demand in some sections for Harvesting Tools, while the expectation of further action on the part of the Barb Wire manufacturers has stimulated inquiries for these goods. Traveling men are again getting out in their territories, after their vacations, and indications seem to point to a satisfactory fall trade.

### Chicago.

(By Telegraph.)

Heavy Hardware jobbers report a very heavy trade in progress and gaining each week. The whole of this year so far has been unexampled in the demand for all kinds of Wagon and Carriage Trimmings. Jobbers in Shelf Hardware report their trade considerably more active than last week. Mail orders are more numerous, and salesmen report the prospects very flattering for an unusually heavy trade later in the season. Staple goods are not moving so well as merchants would like, but they are stocking up in anticipation of a good seasonable trade. Manufacturers' agents handling specialties report their trade picking up steadily from week to week. The buying is not confined to articles of novel character, but even the more staple goods are being taken in by large houses to a much better extent than during July.

### Louisville.

**W. B. BELKNAP & Co.**—In spite of complaints of dull business, and the fact is undeniable that there is a lack of vitality and animation in pretty nearly all branches of trade, as far as we can learn, yet the aggregate of small orders from every section is reassuring. The volume of business, generally of staple goods, is probably up to last year's, or very little behind it, if at all. Things are not half so bad as the newspapers would lead us to believe. Comparatively few factories are closed down, and where they are, it is mainly the result of strikes or some voluntary action on the part of the workmen. The streets of all the cities seem thronged with vehicles moving loads of merchandise, people are stirring about briskly as though business commended itself to their attention, and railroad earnings are by no means insignificant or bad. There is a large consumption, and the present state of affairs may be looked on as healthy. Money is close, particularly for those not in first-class credit, or who cannot put up good

collaterals. For legitimate purposes the banks seem to have a good supply. The statement made on July 9 to the Comptroller of the Currency showed that the ten national banks of Louisville hold over 26 per cent. reserve. The State banks, if anything, are still stronger, as many of these have savings departments. Crop reports are still good in all directions. The wheat crop has been gathered and is remarkably fine. Corn is making at a great rate, with abundant rain and good, warm, bright weather between times. The only drawback to pretty general agricultural prosperity is the very low price of cotton. Last year's immense crop is barely marketed, exceeding all previous yields and estimates as to quantity (the quality was unfortunately poor), when this year's crop begins to come in. The initial bale, we note, was sold a few days ago at 7 cents. Still, if it be true, as some of the modern political economists would have us believe, we cannot have too much wheat until every hungry man has a loaf of bread, so it is that cotton may not be too cheap until every woman and girl in the land has a calico dress to her mind. As the prevailing fashion calls for more material to each gown, it would seem as though the present prices were singularly well adapted to its indulgence.

### St. Louis.

(By Telegraph.)

Hardware continues to show improvement. Jobbers are beginning to lay their plans for the fall campaign, and are arranging their stocks so as to be in position to handle what they are all confidently anticipating—a large fall trade. Shelf Hardware continues to improve, and Heavy Hardware is also in good demand. Wire Nails are selling in good quantities, and at prices that are from 5 to 10 cents higher than were quoted two weeks ago. The feeling is gaining ground daily that Wire Nails have been selling too low, and indications point to higher prices in the near future. The same remarks can be used with reference to Barb Wire, but Nails do not improve much. Tin Plate is in good demand at unchanged prices; if collections would improve, there would be little or no complaint from this section.

### Cleveland.

**THE W. BINGHAM COMPANY.**—July, never a very busy month, has this year been no exception, but we are happy to say shows some improvement over 1890, consisting principally of mail orders, the traveling men having been out on their vacations. They are coming in now, however, prepared to enter the fall campaign, and every indication points to a busy one. Inquiries for Barbed Wire are numerous, owing to the reported consolidation of the manufacturers. If their scheme is accomplished, which it now seems there is no doubt of, Barbed Wire

will without doubt advance quite materially. Nails are somewhat firmer at \$2.10 for Wire and \$1.70 for Steel from stock. City retailers report a very fair trade.

### Portland, Ore.

**FOSTER & ROBERTSON.**—The volume of business for the month of July is fully up to our expectations, as indicated in our letter of the 10th, although trade is somewhat spasmodic and irregular in its movement—at times comparatively quiet, and at other times compelling us to work nights in order to get goods off with reasonable promptness. The demand for Haying and Harvesting Tools has been and is still very active, and stocks, which are now small, will be quite generally cleaned out by the time the demand ceases. There is also a good deal of activity in Gas Pipe, Pumps, Stamped and Pieced Tinware, Ironclad Blue and White Ware, with stocks scarcely equal to the demands. Orders for Nails are not large, but are very numerous, so that we are moving more than our usual quantity. Prices are firm, but low, with no immediate prospect of an advance, which we hoped would take place before this. Collections are very fair, but are hardly keeping pace with sales. This state of affairs will continue until wheat begins to move, which will be within the next 60 days.

### St. Paul.

**FARWELL, OZMUN, KIRK & Co.**—Trade in all lines has been materially reduced by the harvesting now progressing. All crops are excellent, and the weather is fine for harvesting. Prices on all lines of Hardware are generally firm and the prospects for fall trade fair.

### Omaha.

**LEE-CLARKE ANDRESEN HARDWARE COMPANY.**—The conditions prevailing in the jobbing trade hereabouts are very similar to those noted in our last review. No changes of noteworthy character are apparent. The movement of goods is fully up to the standard usual at this midsummer season, and jobbers, as a rule, are satisfied with the monthly record. As the season advances it is only natural that the continued favorable prospect for large crops should serve to stimulate trade to a considerable extent, and it now appears certain that under these conditions the demand for goods during the months approaching will largely exceed that of last year. Quite an extensive amount of orders are being secured by traveling salesmen for later shipment, indicating a desire to secure supplies beforehand, in event of a temporary scarcity of goods when the season fully opens. The Corn crop, which is really the mainstay of this section, is not yet absolutely assured. We continue to receive an abundance of rain, and from some localities we hear complaints that too much moisture is retarding and injuring the growth of this cereal. This



does not appear to be general, however. The reports come from sections only, and generally the low lands. The local money market is characterized by bankers as being in very fair shape. There is not a heavy demand for money just now and the supply appears to be fully equal to any demands likely to be made.

#### San Francisco.

**HUNTINGTON-HOPKINS COMPANY.**—The condition of trade in this market remains practically unchanged, although we might modify this statement by advising that trade has really fallen off a trifle since our last report. Money a little easier. Collections on the improve.

#### Boston.

**BIGELOW & DOWSE.**—There is very little change to note either for the present or the future. The summer vacations are pleasant for those away, but the usual trade of July keeps the reduced force as busy as ever. Orders are small, but well assorted. Since the notice of the consolidation of the Barbed Wire interests there have been more frequent inquiries for quotations, and the trade seem to think an advance is now in order. Stocks of Wire Nails are light, and prices are very low. Some factories are asking 10¢ more to-day than they asked a few weeks ago. Evidently the bottom has been reached both on Wire and Steel Cut Nails. There will be but little change in the volume of business before September, when the fall trade should commence.

#### New Orleans.

**A. BALDWIN & Co.**—Since our last report the situation in this section of the country has somewhat improved, and the outlook is much brighter than it has been for the past 60 days. During the month of July the demand for Shelf Hardware showed a decided improvement, but staples are not moving with the same amount of improvement. The prospect for the best crop ever harvested in the Southwest is very flattering, and we expect to be able to notify you of a magnificent business the coming fall.

### Notes on Prices.

**Cut Nails.**—The market is still very quiet, with few inquiries, and the situation very unsatisfactory to makers. The Eastern mills have been weakening in their quotations and the expectation of higher prices at the latter part of the summer has been generally given up. This also applies in a measure to the Wheeling district. We, however, continue our quotations of \$1.60 to \$1.65 for the Wheeling district, and \$1.50 to \$1.55 in the Eastern district, for round lots at mill, with the usual 25 or 30 cent average.

**Chicago, by Telegraph.**—In Steel Cut Nails a much better business was done by manufacturers' agents last week than for several previous weeks. Sellers in touch with trade over a wider area than merely this section report an excellent inquiry, with some very heavy orders in prospect. For a part of last week the buying move-

ment was exceedingly brisk, but it seems to have been spasmodic. Several good sales were made by a number of manufacturers, however, and consequently the pressure to sell will be less strong for a time. Manufacturers quote on a basis of \$1.70, Chicago, for a 30-cent average, but this rate is shaded on desirable orders. Jobbers quote \$1.75 to \$1.80 from stock.

The Associated Press dispatches that state the Lakeside Nail Company's works, at Hammond, Ind., were burned on the 1st inst. are not entirely correct. The fire was confined mainly to the engine house, and the mill and factory were uninjured. There will be no delay in shipping on orders to customers.

**Wire Nails.**—An improvement may be noted in the demand, and some manufacturers are quoting higher in the expectation of a general advance. A sale at \$1.95 for a well-assorted order has been made by one of the Western mills, although \$2 @ \$2.10 for carload lots at mills may be considered a fair quotation. Small lots from store may be quoted at \$2.15 @ \$2.25.

**Chicago, by Telegraph.**—In Wire Nails a better movement is also reported. Some of the heavy buyers in this market made large purchases last week. Sellers have named some low prices in special cases, but now seem to be quite firm at \$2.05 @ \$2.10, Chicago, for fair-sized orders. Jobbers quote \$2.15 for Wire Nails.

**Barb Wire.**—During the week transactions have not been large, agents having refused to make contracts extending over any length of time, and the trade being uncertain as to the status of this article pending the efforts which have been making to consolidate and control its distribution.

**Chicago, by Telegraph.**—There is some expectation that the market will be a little quiet in view of the advanced prices named by the manufacturers, and in the meantime jobbers are making sales from stock at the old rate of \$2.80 for Painted and \$3.35 for Galvanized. They report the demand from retailers quite light at present.

**The Columbia Patent Company.**—The following official information has been furnished us, under date of August 1, by General Manager J. W. Gates of the Columbia Patent Company, Suite 911, The Rookery, Chicago:

The Columbia Patent Company were organized primarily for the purpose of buying the Washburn & Moen Mfg. Company's patents on Barbed Wire and such other patents as they might from time to time think necessary to buy appertaining to Barbed Fence Wire and Barbed-Wire Machinery, and also for the purpose of issuing licenses, collecting royalties, purchasing and selling Barbed Wire and such other business as might be found profitable in the Iron or Steel line. It is not, however, the policy of the Columbia Patent Company to materially advance the prices on Barbed Wire, as they believe that they can make a handsome profit by reducing expenses of selling goods and by holding the market in a steady and businesslike manner, thereby enabling the dealers to make a fair profit, the manufacturers a fair profit, and yet

deliver the goods into the hands of the consumer at very low rates. The Columbia Patent Company embrace practically every Barbed-Wire concern of any magnitude in the United States on some kind of a contract basis.

When this company purchased the patents from Washburn & Moen Mfg. Company, the Washburn & Moen Mfg. Company and I. L. Ellwood reserved a free license under the patents to manufacture a certain quantity of Barbed Wire per annum during the life of the patents. This right they now hold and are operating under it. Outside the above-named companies the parties who take out a license from this company, and an agreement to sell their entire product of Barbed Fence Wire to this company, represent 85 per cent. of the entire Barbed-Wire tonnage of the licensees of this company.

We have opened offices at the following points, with the following gentlemen in charge as agents:

New York, 93 Reade street, C. H. Rowe, agent.  
Pittsburgh, Lewis Block, Oliver & Rowe, agents.  
Cleveland, National Bank Building, Ed. S. Page, agent.  
Cincinnati, 47 West Pearl street, Jas. Larmon, agent.  
St. Louis, Laclede Building, Clifford & Wolfe, agents.  
San Francisco, 9 Fremont street, A. S. Hallidie, agent.

We also have branch agencies at all the other works where manufacturers have taken the license and contracted to sell their goods to us.

Our present prices for Barbed Wire are as follows:

F.o.b. cars Pittsburgh and Cleveland, \$2.75 per hundredweight for Painted, \$3.25 for Galvanized.  
5 cents per hundredweight advance on above f.o.b. cars Cincinnati and Allentown, Pa.  
10 cents per hundredweight advance for f.o.b. cars Joliet and Chicago.  
15 cents per hundredweight advance for f.o.b. cars St. Louis.  
33 cents per hundredweight advance for f.o.b. cars Omaha.  
35 cents per hundredweight advance for f.o.b. cars Lawrence, Kan.  
75 cents per hundredweight advance for f.o.b. cars San Francisco.

We also sell exclusively the Baker Perfect Barb, and shall continue to maintain the exclusive agency on this Wire, as heretofore. Our prices on the Baker Perfect Barb will be as follows:

Painted, \$3.05; Galvanized, \$3.55, f.o.b., Lockport, Ill.

All the above prices are subject to 5 cents discount per hundredweight in carload lots. Terms: 30 days, or 2 per cent. discount for cash within 10 days from date of invoice.

The Columbia Patent Company paid a large amount of money for the patents which they purchased from the Washburn & Moen Mfg. Company and I. L. Ellwood, as well as for the various patents which they have purchased from other parties. Their value will expire within three years' time. The managers of the company believe that they are justified in making at least a sufficient profit at the Barbed Wire business to reimburse them for the large sums which they have paid for these United States letters patent, and they believe the public will say that they are justified in making a fair, legitimate return upon their investment.

The following divisions of territory have been made for the several sales agencies:

**CHICAGO.**—General offices, 911, "The Rookery." All points in Illinois on and north of the Toledo, Peoria and Warsaw Railway, Wisconsin, Minnesota, North Dakota, South Dakota, Montana, Iowa, Idaho, Nebraska, Wyoming, Utah, Colorado, New Mexico, Arizona and that part of Kansas north of but not including the

Kansas Pacific branch of the Union Pacific Railroad nor suburban towns of Kansas City, Mo.

CINCINNATI.—James Larmon, agent, 47 West Pearl street. Kentucky, Tennessee, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi and Hamilton County, Ohio.

St. Louis.—Clifford & Wolfe, agents, Laclede Building. Missouri, Arkansas, Indian Territory, Louisiana, Texas, and all that part of Kansas south of and including the Kansas Pacific branch of the Union Pacific Railroad and Kansas suburbs of Kansas City, Mo.

SAN FRANCISCO.—A. S. Hallidie, agent, 9 Fremont street. California, Nevada, Oregon and Washington.

NEW YORK.—C. H. Rowe, agent, 98 Reade street. New England, New York, New Jersey, District of Columbia, and Alexandria, Va., Delaware, Maryland east of Hagerstown, Pennsylvania east of and including all points on the Northern Central Railway except Harrisburg; all points east of but not including points on the Cumberland Valley Railway, and all North Atlantic ports to and including Baltimore.

PITTSBURGH.—Oliver & Rowe, agents, Lewis Block. Pennsylvania west of and including Harrisburg, and west of but not including other points on the Northern Central as far south as Harrisburg; west of and including towns south of Harrisburg on Cumberland Valley Railway, Virginia except Alexandria, West Virginia, Maryland west of and including Hagerstown, Indiana, and that part of Illinois south of Toledo, Peoria and Warsaw railway, but not including points on that line.

CLEVELAND.—Ed. S. Page, agent, National Bank Building. Michigan and Ohio, except Hamilton County.

**Steel Goods.**—At the meeting of the Fork and Hoe Makers' Union, June 3, several changes were made in the standard list, these changes to take effect August 1 and to apply to all orders taken for delivery after July 31. The following is the Planter and Cotton Hoe list, as amended:

#### Planter Shank Hoes.

6 and 6½ inch blades, 4½-foot handles...	\$9.50
6 and 6½ inch blades, 5-foot handles....	10.00
7-inch blades, 5-foot handles.....	10.50
7½-inch blades, 5½-foot handles.....	11.50
8-inch blades, 5½-foot handles.....	12.00
8½-inch blades, 5¾-foot handles.....	12.50
9-inch blades, 5¾-foot handles.....	13.00
10-inch blades, 5¾-foot handles.....	14.00

#### Cotton Shank Hoes.

6 and 6½ inch blades, 4½-foot handles...	\$8.50
6 and 6½ inch blades, 5-foot handles....	9.00
7-inch blades, 5-foot handles.....	9.50
7½-inch blades, 5-foot handles.....	10.00
8-inch blades, 5½-foot handles.....	11.00
8½-inch blades, 5½-foot handles.....	11.50
9-inch blades, 5½-foot handles.....	12.00
10-inch blades, 5½-foot handles.....	13.00

Socket Planter and Cotton Hoes advanced \$1.50 per dozen, list.

Longer handles advanced 50 cents per dozen, list, for each 6 inches.

Shorter handles deduct 50 cents per dozen, list for each 6 inches.

Maximum depth of Cotton Hoe Blades shall be ½ inch less than Planter Hoes of same size.

Meadow and Rhode Island Hoes were added to the list to be put on Field Hoes Handles. The list is as follows:

8, 8½ and 9 inch Shank Hoes.....	\$8.50
9½-inch Shank Hoes.....	8.75
10-inch Shank Hoes.....	9.00

Socket Hoes advance \$1 per dozen list.

Blades not to exceed 4 inches in depth.

When on Handles longer than 4½ feet to be listed same as Cotton Hoes.

The following additional changes were also determined upon:

Field Socket and Shank Hoes advanced 25 cents per dozen, list.

Second-quality Hoes shall, in all cases, be put on second-quality handles.

Riveted Socket and Shank Hoes advanced 25 cents per dozen, list.

Two-tine Hay Forks with 12-inch tines advanced 25 cents per dozen, list.

All first quality Manure and Spading Forks, when on wood D Handles, except the "extra heavy square shoulder," advanced 50 cents per dozen, list.

#### Tin and White Enamelled Ware.

The market still continues in a very unsettled condition. Quotations in a large way have recently been made at lower prices than the goods have ever been sold for.

**Glass.**—The price on Glass remains firm, and stocks in manufacturers' hands are reported as low. The question of wages is one that is of deep interest to all connected with the Glass trade, as it will doubtless have a marked influence upon the price of Glass, and also upon the time of starting the factories. It is understood that the manufacturers will endeavor to reduce the operators' wages, and that the operators are strongly opposed to any reduction. Local dealers report a satisfactory business, and the impression prevails that prices are likely to be higher. Pittsburgh quotations remain unchanged, on the following basis: American Window Glass, in carloads, 80 and 10 per cent. discount; less than car lots, 80 and 5 per cent. discount; French Window Glass, 75 and 10 and 5 per cent. discount, with an additional 5 per cent. discount when 50 boxes are ordered and taken in any calendar month. American Plate is held at discount 50, 10 and 5 per cent., and Imported Plate at discount 60 per cent.

**The Metal Market.**—Has been exceedingly dull during the week, with a noticeable decline in the leading metals, and as a consequence manufactured goods in which Pig Tin and Copper enter largely are showing a weakness—so much so that some lines are being offered at prices lower than have been made during the year.

#### Trade Notes.

**SIMPSON IRON COMPANY,** Columbus, Ohio, are offering the trade shoe repairing outfit, consisting of Lasts, Stand for holding Lasts, Hammer, Knife, Awls, Clinch Nails, Cement, &c. Each set is packed in a wooden box, and is referred to as a thoroughly practical kit complete for all purposes. They are designed for the use of farmers and other out of town people.

**HOLLIDAY, PILSON & Co.,** Baltimore, Md., have enlarged their plant and have begun the manufacture of Horse and Mule Shoes. These are referred to as being of the best quality, both in finish and material used. They will continue to manufacture Bar Iron, Steel, Horseshoe Nails and Horseshoers' Supplies.

IN THEIR ADVERTISEMENT this week, to be found on page 112, the McKirney Mfg. Company, Allegheny, Pa., manufacturers of Butts and Hinges, inform the trade that their goods can be procured from H. Keidel & Co., Baltimore, Md., and J. H. Graham & Co., New York City. All inquiries addressed to either of these firms will have careful attention.

THE SUPERIORITY of the productions of American manufacturers is practically appreciated and pleasantly realized by the

Miller Lock Company of Philadelphia, who have developed an important foreign trade, which is confined to no country or continent, and is steadily increasing. They use a full page in this issue to set forth the merit of some of their specialties, past experience having been that many inquiries find here their source, and result in substantial and satisfactory trade. A circular in several languages giving desirable information is sent to foreign inquirers. Recently an order was placed for Locks to be used in the Customs Department of one of the most conservative and critical foreign nations, a satisfactory test having been fully made. As this country has an enormous commerce it is not only a high compliment but a complete verification of the claims made for these Locks.

THE BINGHAMTON WIRE GOODS COMPANY of Binghamton, N. Y., announce that they have placed their sales agency with H. H. & C. L. Munger, who will carry a full and well assorted stock of the Binghamton Blind Staples, Bed Spring Staples, Double Pointed Tacks and all other kinds of Wire Staples at their store, 142 Lake street, Chicago. The Messrs. Munger have also been appointed general Western agents for the Detroit Galvanizing and Sheet Metal Works, manufacturers of Metal Grain Measures, Corrugated Expanding Conductors and Harland Self-Sealing Oil Cans. They have also secured the agency for S. Cheney & Son of Manlius, N. Y., manufacturers of the Diamond Adjustable Stove-Pipe Thimble, and the Southboro Tool Handle Company of Southboro, Mass., manufacturers of the Indestructible Leather-Headed Chisel Handle.

THE AUTOMATIC KNIFE COMPANY, Middletown, Conn., manufacture the Wiltzin Automatic Knife. This is a Pocket Knife which opens by pushing a spring, and allows the blades to be opened with gloves on or with chilled hands, if necessary, an illustration and description of which was given in our issue of May 1, 1890. Special attention is directed to the Palm Leaf, Flower and Heraldic finish of their silverine handles. The silverine handles are referred to as not being plated, but embossed in German silver, resembling sterling silver, and free from tendency to tarnish. They also furnish these Knives with aluminum handles at the same price as with silverine handles.

**HAYDOCK & BISSEL,** 12 Murray street and 15 Park place, New York, in the Special Notice on page 72 announce important sales of Agate Ware and Cutlery, the former on Tuesday, August 11, and the latter on Wednesday, Thursday and Friday, August 12, 13 and 14. A full line of Agate Ware and Blue and White Enamelled Ware will thus be disposed of by order of the Lalance & Grosjean Mfg. Company, as well as a large assortment of Carvers, Butcher Knives, Scissors, Shears, &c., direct from manufacturers and importers, which in connection with a fine line of Breech-Loading Shotguns will be offered in lots to suit the jobbing and retail trade.

THE BRYDEN HORSE SHOE COMPANY of Catsasauqua, Pa., have lighted the new Eureka Compound Hot-Blast Furnace, which has just been completed at their works under the supervision of Superintendent Jacob Roberts. Much has been expected of this furnace, and it is said that the practical results are very satisfactory, the iron produced being very tough and strong in fiber. The growth of these works has been very rapid. They are now completely equipped with labor and time saving facilities, and have a present capacity of 150 Shoes a minute. The demand at this time is referred to as very large.



## A New Wire-Nail Mill.

**A**N ENTERPRISE which is likely to be of very great importance to the Pacific Coast, and incidentally to affect this and other sections of the country, is the building of a Wire-Nail plant at Port Gardner, Puget Sound, 30 miles above Seattle. A short line of railroad is being built to connect the new town of Everett, where it is located, with the Northern Pacific Railroad from Snohomish. The mill will be built by the Puget Sound Wire Nail and Steel Company, of which A. R. Whitney of New York is president and Henry Hewitt, Jr., of Tacoma, is vice-president. The magnitude of this undertaking will be appreciated when we state that the capacity will be 1000 kegs per ten hours. For the present the Nail factory and Wire mill alone will be built. The plans of those who are interested in the undertaking include, however, the building of blast furnaces and Steel plant, a Rod mill, &c. The works, for which the buildings are now in course of construction, embrace a warehouse 200 feet long by 80 feet; a cleaning house, 100 x 100 feet; a Wire mill, 200 x 80 feet; a machine shop, 64 x 90 feet; boiler house, 64 x 48 feet, and a Nail factory, 200 x 80 feet. The cleaning house will contain the latest improved devices for cleaning Wire Rods, which, we may state, will be landed from steamers alongside the dock of the Wire mill. The Wire-drawing department will be equipped with blocks to draw 50 tons of Wire, and is being built by the Birmingham Iron Foundry of Birmingham, Conn., while the Nail factory proper will contain a corresponding number of machines of the make of the American Wire Nail and Tack Company, controlled by A. R. Whitney & Co. Power will be furnished by two Corliss engines, built by Robert Whitehill of Newburg, N. Y. The works will give employment for the present to 200 men.

Last year the shipments of Wire Nails to the Pacific Coast were 300,000 kegs, so that the new mill has a very large market to supply, not counting the probable increase in the current demand, nor taking into account the territory obtainable for the sale of goods in Mexico, South America, Australia and the Sandwich Islands. The new works start off under auspicious circumstances, since they have practically in their favor the freight charges upon Nails shipped by Eastern mills. The location of the works and the enterprise begun under the auspices of the Steel Barge Company afford admirable transportation to all points on Puget Sound and the Pacific Coast, and favorable arrangements have been made with the railroad companies to reach far inland. The Puget Sound Wire Nail and Steel Company will be ready to contract for the delivery of Wire Nails January 1, 1892.

## It Is Reported—

That H. A. Wolcott, formerly a hotel proprietor, has purchased the stock remaining in E. Hockaday's store, Carthage, Mo., and has taken possession. Mr. Wolcott will put in a large assortment of

Hardware at once, and when stocked up he will have one of the finest Hardware stores in that city.

That Lucker Bros. & Palmer, dealers in Implements, Salisbury, Mo., have dissolved, W. B. Palmer retiring. Lucker Bros. will continue the business.

That J. Gutscher, dealer in Hardware, &c., Long Prairie, Minn., has been succeeded by Lano & Denks.

That W. H. Davis has opened a new Hardware store at Michigan City, Ind.

That A. Warnken contemplates opening a new Hardware store at La Grange, Texas.

That Snyder & Warne, dealers in Hardware, Implements, &c., Chrisman, Ill., were burned out on the 20th inst.

That J. C. Bates & Co. have commenced the Hardware business at Gainesville, Fla.

That the Hardware firm of Cooper, Morris & Co., Terre Haute, Ind., have dissolved partnership, Chas D. Cooper selling his interest to Wm. D. Morris and B. G. Hudnut. The business will be continued under the firm name of W. D. Morris & Co.

That C. R. Ray will about September 1 commence the Hardware business at Meredosia, Ill.

That Chester R. Converse has purchased an interest in the Hardware store of A. S. Nichols, Wellsboro, Pa. The new firm will be conducted under the style of Nichols & Converse.

That the entire stock of Hardware formerly owned by Morrison & Co., Atlanta, Ga., has been sold to James Logan and J. C. McCrory.

That G. W. Meader, dealer in Hardware, Sibley, Iowa, is erecting a new Hardware store, to which he will remove his business on completion.

That G. H. Collins & Co. succeed Jones & Collins, dealers in Stoves, Hardware, Vehicles, Implements, &c., Greenville, Texas.

That Wilson & Van Tuyle, Hardware dealers at Homer, N. Y., have closed out their business.

That Otto Meinshausen, dealer in Hardware, Logansport, Ind., has sold out to the V. M. Williams Company.

That James Gray, Hardware, &c., Fort Wayne, Ind., has disposed of his business to Schulte & Frederick.

That M. J. Smith has withdrawn from the firm of Lazarus & Smith, dealers in Hardware, Stoves, Implements, &c., Charleston, S. C. The other partner, W. H. Lazarus, will continue the business.

That Bissell & Randall, Rouse's Point, N. Y., will in a few months move into a new store, which will be better adapted to the requirements of their enlarging business.

That Morrison & Hudson are a new firm handling Hardware, &c., at Paris Crossing, Ind.

That R. W. Pearson's Hardware store at Wyoming, N. Y., was burned out on the 18th inst.

That Zadavil & Patterman are thinking of opening a new Hardware store at Crete, Neb.

That Lawrence & Hitch, Louisville, Tenn., have opened a Hardware store at that point.

That D. D. Kimball, Dover, Minn., has sold his Hardware business and store to A. A. Cady & Son.

That the Hardware store of John Anderson & Bro., Missouri Valley, Iowa, was robbed on the 17th ult. Revolvers valued at \$50 were stolen.

That Taylor & Percival's Hardware store at Waltham, Mass., is being fitted up in an attractive manner.

That William Pope has opened a new Hardware store at Latham, Ill.

That Frank Rose has sold his interest in the Hardware business of Evans & Rose, Savannah, N. Y., to R. H. Kelley.

## Price-Lists, Circulars, &c.

**M**ERWIN, HULBERT & CO., New York: Athletic Catalogue No. 2. It contains illustrations and price-lists of Athletic Goods, and is accompanied by a discount sheet. In this book they have aimed to illustrate and describe as far as practicable the line of goods they carry in stock, but for want of space it is impossible for them to illustrate or describe all the goods they carry for athletic, gymnasium and outdoor sports. It is their intention at all times to carry a most complete stock of all goods that pertain purely to the Sporting Goods trade. The catalogue, which is fully illustrated, shows a large and interesting line of the class of goods to which it relates.

BUHL, SONS & CO., Detroit, Mich.: Price Current under date of August 1. This is devoted to illustrations and prices of goods adapted to the fall trade, such as Axes, Cross-Cut and Wood Saws, Lanterns, Corn Knives and Corn Shellers, Meat Cutters, &c. It also shows Bird Cages, Butcher Knives, Ammunition and Sporting Goods.

A. J. LINDEMANN & HOVERSON COMPANY, Milwaukee, Wis.: Elbows, Stove Pipe, Dripping Pans, Bread Pans, &c. These goods are illustrated, with accompanying price-lists.

NEW COMBINATION FOLDING BATHTUB COMPANY, Marshall, Mich.: Combination Folding Baths and Family Portable Chair Bath. The Chair Bathtub has the advantage of being used in a sick room, as it can be brought directly to the patient's bedside. It may also be used for medicated, Turkish, electric and vapor baths by adjusting a flexible mantle which is designed to fit closely around the neck, to confine all the heated air or vapors, as the case may be.

F. P. SMITH WIRE AND IRON WORKS, Chicago, Ill.: Fences and Railings, Wire Cloth and Netting, Stable Fixtures, Jail Work, Roof Cresting, Builders' Work, Stairs, Guards, Vases, Vanes, &c.; also Art Metal Work, in Brass, Steel and Iron.

THE SUN NOVELTY WORKS, Greenfield, Ohio: Coffee Mills and Rat Traps. In their catalogue these goods are referred to as an odd but interesting combination. Illustrations are given of the Champion, Means, Sun, Gem, Buckeye, Model, Perfect and Economy Coffee Mills; also of the Safety, Novelty, Peerless and Leader Rat Traps. These goods are represented as first class, and samples will be sent express prepaid by the manufacturers.

GEO. D. WINCHELL MFG. COMPANY, Cincinnati, Ohio: Coal Vases and Hods, Toilet Ware, Japanned, Stamped and Plain Tinned Goods. A catalogue and price-list entitled "A Household Luxury" is devoted entirely to Coal Vases and Coal Hods. Illustrations are given of these highly-decorated goods in a most artistic manner, the cuts being on paper of a different tint from the surrounding paper. The captions and prices are in red, and taken as a whole the book is one to attract attention.

JOS. DIXON CRUCIBLE COMPANY, Jersey City, N. J., issue a pictorial calendar card for the month of August. They call attention to tough, smooth Leads of their Pencils, and to the ease with which they mark.

JAS. FALLOWS & SONS, Philadelphia, Pa.: Manufacturers and sole agents for the Ross Whistle Company. The Ross Whistle is a pneumatic one for use in the mouthpiece of a Speaking Tube. The mouthpiece and shell have no crank or spring, but the Whistle stands at an angle and is blown against the mouthpiece when the tube is blown through from the opposite end. Testimonials indicate the esteem in which these Whistles are held.

## Foreign Trade.

THE FOLLOWING LETTER from Mr. Lyon, who, as our readers are aware, is making a tour of the world on behalf of *The Iron Age* and a number of American manufacturers, gives some points of value to persons who are interested in our foreign trade relations. Mr. Lyon is now on his way to Cape Town, where the more important part of his tour will practically begin:

LONDON, ENGLAND, JULY 23, 1891.

To *The Iron Age*: It is interesting to notice the peculiar scheme of business at the different great centers. In Hamburg business commences as early as it does in Chicago; at 9 o'clock one will be well received, but at 1.30 every one adjourns to the "Exchange," a grand building several hundred feet square. It is an open board of all mercantile interests, the stock brokers have one space, another is allotted to the shipping interests, &c., each branch of trade having a location on the great floor. Markt & Co. and Hammacher & Delius, our American exporters, have here a location. I suppose a great deal of business is accomplished during the hour spent on the Exchange, but I do not believe it is in proportion to the time spent. After an hour at the Exchange, dinner is observed, and the merchants return to their offices to attend to correspondence and are not expected to receive callers.

Hamburg is the great export center of Germany. Here are located many houses whose sole business is the China and Japan trade, with others devoted to Australian trade, &c. From this city the trade of Vladivostock and other Eastern Siberian towns get their supplies, whether American or European, chiefly through Messrs. Kunst & Albers and H. W. Dieckmann.

At Berlin there are, of course, several wholesale Hardware houses, but the demand for American goods is even more limited than in England. I think the line hardly extends beyond Machinery and Machinists' Tools, with, of course, agricultural lines. I would like to see a store in Berlin devoted to American sundries, and I believe it would yield a good income. It would prove a good investment if it returned half the net profits of such a house now at Paris. There seems to be a larger scope in Paris than in Berlin for the American salesman, in spite of their strong protection in the shape of a specific duty. The Government seems very pliable in the hands of the manufacturers, and is continually drawing the lines closer. We do not enjoy protection quite so much when it shuts us out from a foreign market. The enthusiasm about either protection or free trade is largely born of selfishness. I made a good customer, however, in a house whose business had been that of exporting to the States, but the McKinley bill cut off so much of their occupation that they are seeking to atone for this by importing American lines.

It is very pleasant to see in offices at Berlin and Paris great files of *The Iron*

*Age*. The manager of a large and wealthy house said he considered it part of his weekly duty to go carefully over this paper on its arrival. Another said he had gotten this line and that through scanning *The Iron Age* advertisements, which is encouraging.

But what a trial of patience to attempt business through an interpreter, and many who understand English a little led me to believe I had never learned my mother tongue. I am grateful that the balance of my trip is through English-speaking countries.

POLHEMUS LYON.

## Foreign Notes.

J. A. Henckels of Solingen has lately moved into a handsome new store at Berlin. The retail department in front may be 50 feet square, while the wholesale rooms run back from this 100 feet and form a square in the rear. It is all handsomely fitted up in light wood, etched windows, &c.—an unusually attractive establishment.

Schuchardt & Schutte of Berlin, now that they have more space in their new quarters, are giving greater attention to extending their line of American imports, chiefly in machinists' and engineers' requirements. They are also manufacturers of a Pulley Block which it is claimed accomplishes far more than the Weston. It is a success in Germany and is well spoken of in France.

Ph. Roux & Co. of Paris are seeking new American connections and are indeed a desirable medium for manufacturers of machinery and tools.

Ostheimer Bros. of Paris are agents for the Bissell Carpet Sweeper and carry a liberal stock. They have only had the account six months, but are making it tell.

Shepard & Brown, whose Paris depot of American novelties is a very popular resort, are figuring quite largely as manufacturers of Lawn Tennis lines and are hard pressed to satisfy the demand.

Burton Fils of Paris have just opened an office in London at 158 Queen Victoria street, under the title of C. W. Burton. They have made a success on the Continent of American Emery Wheels and Twist Drills, which lines they also control in Great Britain and to which they hope to add some others akin. E. M. Griffith, who was manager of the Paris house, is in charge of the London concern.

## Exports.

PER BARK DANIA, JULY 8, 1891, FOR FREEMANTLE, AUSTRALIA.

By R. W. Forbes & Son.—6 Pumps, 36 dozen Axes, 2 packages Pumps, 6 dozen Shovels, 11,200 pounds Barb Wire, 4 cases Rifle Tools, 20 cases Cartridges and Primers, 2 cases Shovels and Scoops, 4 cases Carriage Bolts, 28 coils Manila Rope, 10 packages Agricultural Machinery, 2 packages Hardware, 34 packages Pumps and Scales, 53 cases Tools, 84 dozen Hardware.

By R. W. Cameron & Co.—72 packages Harvesters and Mowers, 24 cases Axes, 2 cases Axes, 1 case Hammers, 2 cases Meat Choppers, 4 cases Store Trucks, 1 case Drills, 1 case Saws, 3 cases Grindstone Fixtures, 1 case Pumps, 4 barrels Cartridges, 1 case Stencils, 10 dozen Axes, 6 dozen Hatchets, 50 dozen Picks, 10 dozen Axes, 4 dozen Forks, 24 sets Axes, 1 box Tapes 6 dozen Wrenches, 2 racks Churns, 1 case Hammers, 4 cases Hardware, 1 case Saws, 1 case Braces, 1 case

Plumbs and Levels, 9 cases Nails, 4 cases Cartridges, 2 cases Wringers, 29 cases Bolts, 12 cases Guns, Cartridges and Tools, 2 packages Blocks.

PER SHIP NEBO, JULY 10, 1891, FOR SYDNEY, N. S. W.

By Simpson, Hall, Miller & Co.—17 casks Plated Ware.

By Herd & Barton.—10 casks Plated Ware.

By Rogers, Smith & Co.—2 boxes Plated Ware.

By Winchester Repeating Arms Company.—4 cases Guns, 1 case Cartridges.

By W. K. Freeman.—1 case Drills, 2 cases Axes.

By Atlas Tack Company.—46 boxes Nails.

By V. Basanta.—17 packages Lamp Goods, 5 cases Axes, 18 Ladders.

By W. E. Feek.—3 packages Plated Ware.

By Healy & Earl.—1 hoghead Iron Pumps, 2 boxes Scales, 5 boxes Drills, 2 cases Blowers,

11 cases Pulleys, 2 cases Bushings, 3 boxes Emery Wheels, 1 bale Rubber Packing, 1 box Pipe Fittings, 2 boxes Wood-Working Machinery, 6 boxes Hardware, 1 case Saws.

By Arnold, Henry & Co.—1 case Hardware, 2 cases Saddlery Hardware.

By R. W. Forbes & Son.—204 packages Agricultural Implements, 15 Grindstones.

By Coombs, Crosby & Eddy.—10 dozen Carpenters' Tools, 1 case Saws, 1 case Hatchets,

16 cases Axes, 1 case Trowels, 3 cases Wrenches, 2 cases Washita Stone, 1 case Wrenches, 1 barrel Braces, 1 case Traps, 1 case Carpenters' Tools, 8 cases Hatchets, 1 case Braces, 2 cases Bush Hooks.

By McLean Bros. & Rigg.—36 dozen Mouse Traps, 8 gross Chalk Lines, 9 dozen Locks,

1 dozen Pumps, 9 dozen Pruning Shears, 1 dozen Miter Boxes, &c., 2 dozen Churns, 2 gross Rat Traps, 5 gross Wire Goods, 3 dozen Saws, 74 dozen Mouse Traps, 9 dozen Hay Forks, 160 cases Fire Arms and Cartridges, 54 dozen Mouse Traps, 14 dozen Cow Bells, 1 dozen Money Tills, 57 Plated Ware.

By A. S. Lascelles & Co.—1 gross Razor Strops, 4 dozen Wrenches, 2 gross Lanterns,

2 cases Hardware, 2 gross Razor Strops, 1 gross Cutlery.

By Strong & Trowbridge.—1 case Plated Ware, 1 case Picks, 1 case Drills, 1 case Snaths, 24 boxes Hay Knives, 1 case Emery Wheels, 1 case Hardware, 1 case Hardware,

1 case Chucks, 3 cases Hardware, 6 dozen Lemon Squeezers.

By W. H. Crossman & Bro.—2 cases Hardware, 3 Horse Hoes, 7 Jacks, 11 packages Carriage Hardware, 2 dozen Horse Hoes, 15 dozen Hammers, 40 dozen Axes, 18 dozen Cow Bells, 10 dozen Picks, 2 cases Stone, 6 cases Hardware, 10 boxes Axes, 1 case Air Guns, 54 Rifles, 100,000 Primers, 79 dozen Axes, 34 dozen Forks, 1 dozen Axes, 4 cases Carriage Hardware, 12 dozen Snaths, 1 1/4 dozen Revolvers, 5000 Cartridges.

By the F. B. Wheeler Company.—1 case Brushes, 4 cases Hardware, 1 case Hardware, 5 cases Bird Cages, 3 cases Brushes, 1 case Hardware, 1 package Brushes.

By R. W. Cameron & Co.—50 cases Agricultural Implements, 30 Refrigerators, 75 pounds Hardware, 10 Refrigerators, 1 case Lamp Goods, 2 cases Hardware, 1 box Forgings, 5 boxes Tools, 1 box and 3 cases Hardware, 1 box Belting, 1 case Wire Cloth.

By the F. B. Wheeler Company.—1 case Brushes, 4 cases Hardware, 1 case Hardware, 5 cases Bird Cages, 3 cases Brushes, 1 case Hardware, 1 package Brushes.

By R. W. Cameron & Co.—50 cases Agricultural Implements, 30 Refrigerators, 75 pounds Hardware, 10 Refrigerators, 1 case Lamp Goods, 2 cases Hardware, 1 box Forgings, 5 boxes Tools, 1 box and 3 cases Hardware, 1 box Belting, 1 case Wire Cloth.

By the F. B. Wheeler Company.—1 case Brushes, 4 cases Hardware, 1 case Hardware, 5 cases Bird Cages, 3 cases Brushes, 1 case Hardware, 1 package Brushes.

By R. W. Cameron & Co.—50 cases Agricultural Implements, 30 Refrigerators, 75 pounds Hardware, 10 Refrigerators, 1 case Lamp Goods, 2 cases Hardware, 1 box Forgings, 5 boxes Tools, 1 box and 3 cases Hardware, 1 box Belting, 1 case Wire Cloth.

By the F. B. Wheeler Company.—1 case Brushes, 4 cases Hardware, 1 case Hardware, 5 cases Bird Cages, 3 cases Brushes, 1 case Hardware, 1 package Brushes.

By R. W. Cameron & Co.—50 cases Agricultural Implements, 30 Refrigerators, 75 pounds Hardware, 10 Refrigerators, 1 case Lamp Goods, 2 cases Hardware, 1 box Forgings, 5 boxes Tools, 1 box and 3 cases Hardware, 1 box Belting, 1 case Wire Cloth.

By the F. B. Wheeler Company.—1 case Brushes, 4 cases Hardware, 1 case Hardware, 5 cases Bird Cages, 3 cases Brushes, 1 case Hardware, 1 package Brushes.

By R. W. Cameron & Co.—50 cases Agricultural Implements, 30 Refrigerators, 75 pounds Hardware, 10 Refrigerators, 1 case Lamp Goods, 2 cases Hardware, 1 box Forgings, 5 boxes Tools, 1 box and 3 cases Hardware, 1 box Belting, 1 case Wire Cloth.

By the F. B. Wheeler Company.—1 case Brushes, 4 cases Hardware, 1 case Hardware, 5 cases Bird Cages, 3 cases Brushes, 1 case Hardware, 1 package Brushes.

By R. W. Cameron & Co.—50 cases Agricultural Implements, 30 Refrigerators, 75 pounds Hardware, 10 Refrigerators, 1 case Lamp Goods, 2 cases Hardware, 1 box Forgings, 5 boxes Tools, 1 box and 3 cases Hardware, 1 box Belting, 1 case Wire Cloth.

By the F. B. Wheeler Company.—1 case Brushes, 4 cases Hardware, 1 case Hardware, 5 cases Bird Cages, 3 cases Brushes, 1 case Hardware, 1 package Brushes.

By R. W. Cameron & Co.—50 cases Agricultural Implements, 30 Refrigerators, 75 pounds Hardware, 10 Refrigerators, 1 case Lamp Goods, 2 cases Hardware, 1 box Forgings, 5 boxes Tools, 1 box and 3 cases Hardware, 1 box Belting, 1 case Wire Cloth.

By the F. B. Wheeler Company.—1 case Brushes, 4 cases Hardware, 1 case Hardware, 5 cases Bird Cages, 3 cases Brushes, 1 case Hardware, 1 package Brushes.

By R. W. Cameron & Co.—50 cases Agricultural Implements, 30 Refrigerators, 75 pounds Hardware, 10 Refrigerators, 1 case Lamp Goods, 2 cases Hardware, 1 box Forgings, 5 boxes Tools, 1 box and 3 cases Hardware, 1 box Belting, 1 case Wire Cloth.

By the F. B. Wheeler Company.—1 case Brushes, 4 cases Hardware, 1 case Hardware, 5 cases Bird Cages, 3 cases Brushes, 1 case Hardware, 1 package Brushes.

By R. W. Cameron & Co.—50 cases Agricultural Implements, 30 Refrigerators, 75 pounds Hardware, 10 Refrigerators, 1 case Lamp Goods, 2 cases Hardware, 1 box Forgings, 5 boxes Tools, 1 box and 3 cases Hardware, 1 box Belting, 1 case Wire Cloth.

By the F. B. Wheeler Company.—1 case Brushes, 4 cases Hardware, 1 case Hardware, 5 cases Bird Cages, 3 cases Brushes, 1 case Hardware, 1 package Brushes.

By R. W. Cameron & Co.—50 cases Agricultural Implements, 30 Refrigerators, 75 pounds Hardware, 10 Refrigerators, 1 case Lamp Goods, 2 cases Hardware, 1 box Forgings, 5 boxes Tools, 1 box and 3 cases Hardware, 1 box Belting, 1 case Wire Cloth.

By the F. B. Wheeler Company.—1 case Brushes, 4 cases Hardware, 1 case Hardware, 5 cases Bird Cages, 3 cases Brushes, 1 case Hardware, 1 package Brushes.

By R. W. Cameron & Co.—50 cases Agricultural Implements, 30 Refrigerators, 75 pounds Hardware, 10 Refrigerators, 1 case Lamp Goods, 2 cases Hardware, 1 box Forgings, 5 boxes Tools, 1 box and 3 cases Hardware, 1 box Belting, 1 case Wire Cloth.

By the F. B. Wheeler Company.—1 case Brushes, 4 cases Hardware, 1 case Hardware, 5 cases Bird Cages, 3 cases Brushes, 1 case Hardware, 1 package Brushes.

By R. W. Cameron & Co.—50 cases Agricultural Implements, 30 Refrigerators, 75 pounds Hardware, 10 Refrigerators, 1 case Lamp Goods, 2 cases Hardware, 1 box Forgings, 5 boxes Tools, 1 box and 3 cases Hardware, 1 box Belting, 1 case Wire Cloth.

By the F. B. Wheeler Company.—1 case Brushes, 4 cases Hardware, 1 case Hardware, 5 cases Bird Cages, 3 cases Brushes, 1 case Hardware, 1 package Brushes.

By R. W. Cameron & Co.—50 cases Agricultural Implements, 30 Refrigerators, 75 pounds Hardware, 10 Refrigerators, 1 case Lamp Goods, 2 cases Hardware, 1 box Forgings, 5 boxes Tools, 1 box and 3 cases Hardware, 1 box Belting, 1 case Wire Cloth.

By the F. B. Wheeler Company.—1 case Brushes, 4 cases Hardware, 1 case Hardware, 5 cases Bird Cages, 3 cases Brushes, 1 case Hardware, 1 package Brushes.

By R. W. Cameron & Co.—50 cases Agricultural Implements, 30 Refrigerators, 75 pounds Hardware, 10 Refrigerators, 1 case Lamp Goods, 2 cases Hardware, 1 box Forgings, 5 boxes Tools, 1 box and 3 cases Hardware, 1 box Belting, 1 case Wire Cloth.

By the F. B. Wheeler Company.—1 case Brushes, 4 cases Hardware, 1 case Hardware, 5 cases Bird Cages, 3 cases Brushes, 1 case Hardware, 1 package Brushes.

By R. W. Cameron & Co.—50 cases Agricultural Implements, 30 Refrigerators, 75 pounds Hardware, 10 Refrigerators, 1 case Lamp Goods, 2 cases Hardware, 1 box Forgings, 5 boxes Tools, 1 box and 3 cases Hardware, 1 box Belting, 1 case Wire Cloth.

By the F. B. Wheeler Company.—1 case Brushes, 4 cases Hardware, 1 case Hardware, 5 cases Bird Cages, 3 cases Brushes, 1 case Hardware, 1 package Brushes.

By R. W. Cameron & Co.—50 cases Agricultural Implements, 30 Refrigerators, 75 pounds Hardware, 10 Refrigerators, 1 case Lamp Goods, 2 cases Hardware, 1 box Forgings, 5 boxes Tools, 1 box and 3 cases Hardware, 1 box Belting, 1 case Wire Cloth.

By the F. B. Wheeler Company.—1 case Brushes, 4 cases Hardware, 1 case Hardware, 5 cases Bird Cages, 3 cases Brushes, 1 case Hardware, 1 package Brushes.

By R. W. Cameron & Co.—50 cases Agricultural Implements, 30 Refrigerators, 75 pounds Hardware, 10 Refrigerators, 1 case Lamp Goods, 2 cases Hardware, 1 box Forgings, 5 boxes Tools, 1 box and 3 cases Hardware, 1 box Belting, 1 case Wire Cloth.

By the F. B. Wheeler Company.—1 case Brushes, 4 cases Hardware, 1 case Hardware, 5 cases Bird Cages, 3 cases Brushes, 1 case Hardware, 1 package Brushes.

By R. W. Cameron & Co.—50 cases Agricultural Implements, 30 Refrigerators, 75 pounds Hardware, 10 Refrigerators, 1 case Lamp Goods, 2 cases Hardware, 1 box Forgings, 5 boxes Tools, 1 box and 3 cases Hardware, 1 box Belting, 1 case Wire Cloth.

By the F. B. Wheeler Company.—1 case Brushes, 4 cases Hardware, 1 case Hardware, 5 cases Bird Cages, 3 cases Brushes, 1 case Hardware, 1 package Brushes.

By R. W. Cameron & Co.—50 cases Agricultural Implements, 30 Refrigerators, 75 pounds Hardware, 10 Refrigerators, 1 case Lamp Goods, 2 cases Hardware, 1 box Forgings, 5 boxes Tools, 1 box and 3 cases Hardware, 1 box Belting, 1 case Wire Cloth.

By the F. B. Wheeler Company.—1 case Brushes, 4 cases Hardware, 1 case Hardware, 5 cases Bird Cages, 3 cases Brushes, 1 case Hardware, 1 package Brushes.

By R. W. Cameron & Co.—50 cases Agricultural Implements, 30 Refrigerators, 75 pounds Hardware, 10 Refrigerators, 1 case Lamp Goods, 2 cases Hardware, 1 box Forgings, 5 boxes Tools, 1 box and 3 cases Hardware, 1 box Belting, 1 case Wire Cloth.

By the F. B. Wheeler Company.—1 case Brushes, 4 cases Hardware, 1 case Hardware, 5 cases Bird Cages, 3 cases Brushes, 1 case Hardware, 1 package Brushes.

By R. W. Cameron & Co.—50 cases Agricultural Implements, 30 Refrigerators, 75 pounds Hardware, 10 Refrigerators, 1 case Lamp Goods, 2 cases Hardware, 1 box Forgings, 5 boxes Tools, 1 box and 3 cases Hardware, 1 box Belting, 1 case Wire Cloth.

By the F. B. Wheeler Company.—1 case Brushes, 4 cases Hardware, 1 case Hardware, 5 cases Bird Cages, 3 cases Brushes, 1 case Hardware, 1 package Brushes.

By R. W. Cameron & Co.—50 cases Agricultural Implements, 30 Refrigerators, 75 pounds Hardware, 10 Refrigerators, 1 case Lamp Goods, 2 cases Hardware, 1 box Forgings, 5 boxes Tools, 1 box and 3 cases Hardware, 1 box Belting, 1 case Wire Cloth.

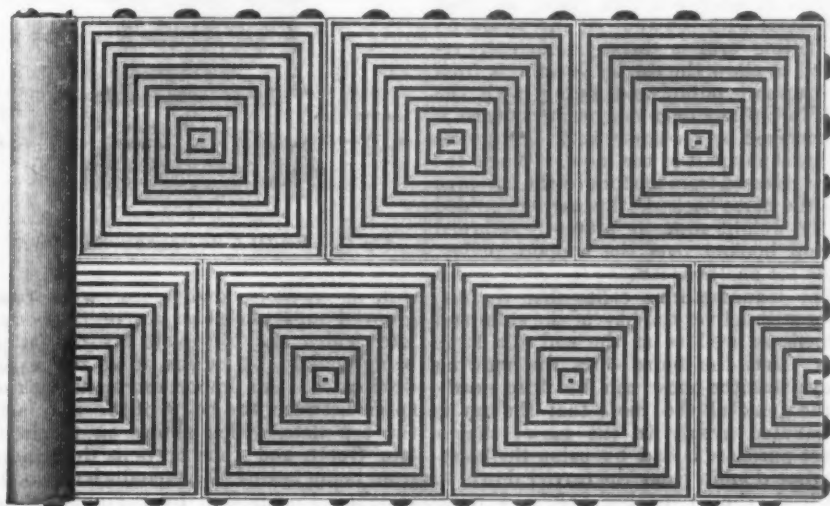


**Hege's Lock-Joint Pavement.**

The illustrations presented herewith show views of Hege's Lock-Joint Pavement, which is manufactured by the Salem Iron Works, Salem, N. C. Fig. 1 shows the general appearance of a portion of the

lock-joint is made, preventing the blocks from rising or sinking. This pavement, we understand, is adaptable to anything that will yield enough to embed the bottom side of the block, sand, cement, asphalt or any similar substance being used. It is further claimed that the blocks form

to these illustrations, but request cuts of other lines from the manufacturers whose goods he is selling. There is no advertisement that catches the eye so quickly as the one that is illustrated. The manufacturers, on the other hand, should be able to furnish cuts of the size required for a single column in a daily or weekly paper, and also should furnish them promptly. We are aware that many manufacturers have in the past signified their desire to have customers avail themselves of such cuts, and also that many merchants have reaped much benefit by thus co-operating with the manufacturers. We trust that this practice may become more general, and we feel assured that those who have not tried the plan will be agreeably surprised at the results.



Hege's Lock-Joint Pavement.—Fig. 1.—Section of Pavement.

pavement made from five full size and two half-size sections of paving blocks with one section of lock-joint curbing at the left. Fig. 2 illustrates the face or top side of 12 x 12 inch block, with the projections forming part of the lock joint, while in Fig. 3 the bottom of such a block is shown with the curved ribs around the

a perfectly smooth and even surface. It is pointed out that besides making an attractive sidewalk, the pavement can be used for floors in halls, vestibules, &c., taking the place of English tile. It is also adapted to rolling mills, foundries, machine shops, &c., where it is inadvisable to use wooden floors.

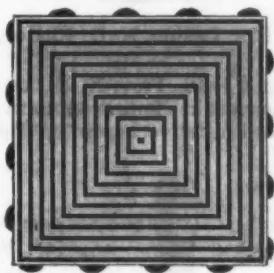


Fig. 2.—Top View of Paving Block.

edge which form the locks. These blocks, we understand, can be made of any material adapted for such purposes, but at present are manufactured of iron. They also can be made in other forms, such as triangular, hexagonal, octagonal, &c. The block illustrated is 12 inches square and  $\frac{1}{4}$  inch thick, with concentric corrugations on both sides, while an irregular rib, de-

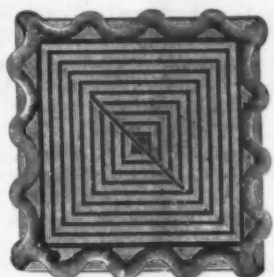


Fig. 3.—Bottom View of Paving Block.

scribing a series of curves around the bottom edge, is added to give strength and also form locks and recesses, by means of which the blocks are held together. The projections and recesses alternate, and when the blocks are put together a firm

**Zeller's Automatic Safety Gate.**

Richmond Safety Gate Company, Richmond, Ind., and 194 Water street, New York, are offering an automatic safety gate for elevators. The gate remains open while the elevator carriage remains stationary at any floor, but as the carriage moves from any floor, either up or down, the gate automatically closes. This is accomplished by a friction roller, toothed rack and vibrating bar, so operated by a gear wheel on a winding shaft that the gate is opened and closed as the carriage is stopped or started. The manufacturers advise us that the Zeller gate is applicable to elevators inclosed in brick, metal and wooden shafts or wells; and that it can be applied to elevators with corner posts, or to those which are operated at high speed.

The Electric Cutlery Company, 91 Chambers street, New York, issue a circular to their customers referring to the fact that many merchants have a permanent space in their city newspaper for advertising purposes, which they change from time to time, and call attention to cuts on the other side of the sheet. These are cuts of an Electric razor, razor bone, pocket knife and scissors. As to these cuts being of mutual benefit to the manufacturers and merchants they remark: "As you are running these goods, it will undoubtedly prove to your advantage to advertise them, and if you wish us to send you one or all of these cuts, we shall be pleased to do so, making no charge if they are returned when you are through with them. If you wish smaller cuts than these we will be pleased to furnish them." This is a move in the right direction, and it may not be out of place to bring out more strongly both sides of this question. No merchant handling this line of goods should refuse the offer. Neither should he be satisfied to confine his advertising

**Schmuck's Mop Wringer.**

Adjustable Chair Company, 112 Bank street, Cleveland, Ohio, are introducing a mop wringer, as illustrated in Fig. 1. The metal parts are of wrought iron, while the



Fig. 1.—Schmuck's Mop Wringer No. 2.

rolls are made of hard maple, chemically treated. The wringer is made so that it will fit any sized pail, and may be quickly attached or removed. The manufacturers claim that with the wringer boiling hot water may be used; that grease stains and dirt can be loosened with concentrated lye, potash or soda; that the rolls wring the



Fig. 2.—Schmuck's Mop Wringer Attached.

mop dry, leaving the mop clean and free from dirt, and that while mopping gloves can be used, as the hands do not come in contact with the water. Fig. 2 represents the wringer ready for use. In wringing the operator places the mop between the rolls, and presses the upper roll down with the foot, after which the mop is withdrawn. This wringer is made and adapted for family use, and is referred to as being simple and durable.

### Trackless Hay Elevator.

Trackless Hay Elevator Company, 233 St. Clair street, Toledo, Ohio, are offering the trade a hay elevator, as shown in Figs. 1 and 2. The elevator is shown in Fig. 3,

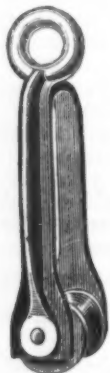


Fig. 1.—Support Pulley.

with ropes attached, in working order. The support pulley is fastened at the peak of the barn, nearly over the beam, between the barn floor and the mow to be filled, with the carrier toward the mow. The



Fig. 2.—Carrier.

$\frac{1}{2}$  inch rope D, is run over a pulley suspended to the rafters, and to this rope is attached a weight sufficiently heavy to cause the empty carrier, after discharging a fork full of hay, to return with the fork

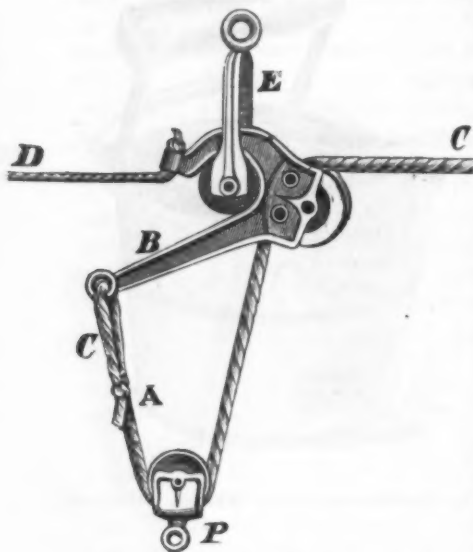


Fig. 3.—Trackless Hay Elevator.

to the support pulley. The  $\frac{1}{2}$  inch hoisting rope C is attached to the tilting arm of the carrier, passed through the fork pulley P, thence through the carrier pulley. It is then passed through three pulleys and attached to the horse, the same arrangement being followed as with a track carrier. The operation of

the elevator is described as follows: While a fork full of hay is being hoisted from the wagon the carrier is being held securely at the peak of the barn in a tilted or hooked position, upon the support pulley, caused by the strain of the hoisting rope acting upon the end of the tilting arm B. When the hay is hoisted high enough to allow the fork pulley to come in contact with the knot A, the strain on the tilting arm is thereby sufficiently relieved to allow the carrier to unhook from the support pulley and swing with the fork full of hay over the beam, whence it is conveyed by the horse back to the loft pulley at any part of the mow. When the hay is released from the fork by the trip rope and the horse backed, the carrier, guided by the weight rope, is promptly returned to and hooked over the support pulley, ready for another load.

The manufacturers claim that the elevator will deliver the hay at the sides and corners, as well as at the end of a large mow; that the horse does the mowing away; that the mow can be filled nearly to the peak of the roof; that the hay is distributed evenly in the mow; that a direct purchase is had by using the hoisting rope double from the carrier down to the load, thus requiring only a  $\frac{1}{4}$  rope, and one horse to work it; that it can be

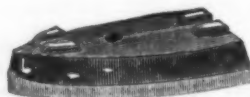


Fig. 2—Showing, with No. 2, a Set of Heidel's Irons.

put in working position in a barn in about one hour; that when one mow is filled it can easily be changed to other mows or barns, and that it is simple, durable, effective and cheap. The device may be kept by hardware dealers, and the elevator can be fitted out complete with rope, pulleys, hooks, etc., from stock.

### Standard Elevator Bucket.

Avery Bucket and Cattle Trough Company, 14 to 20 Hickox street, Cleveland, Ohio, are introducing an improved steel elevator bucket, as illustrated herewith. These are made of any desired size or gauge of steel, having long flat backs, which are referred to as a great saving in the wear on belts. The round bottoms and smooth insides, together with the special shape of these buckets, are alluded to as insuring the free and quick delivery



Standard Elevator Bucket.

of any substance desired to be elevated. The buckets are constructed by means of special machinery, with no braces or bands to hold them together, and in such a manner, it is stated, as to produce a strong and durable bucket. They are especially adapted for elevating coarse material, such as coal, iron ore, broken stone, sand, clay, gravel, &c.

McKenzie & Mikesell, Wauseon, O., make iron force and lifting pumps, with double action single cylinders. They are also making this cylinder for attaching to all sizes of iron pumps, iron pipe and wind pumps, with a double force lift from a single cylinder.

### The Heidel Cold Handle Sad Iron.

The Heidel Mfg. Company, St. Louis, Mo., are introducing a sad iron, as illustrated in Figs. 1 and 2. The body of this

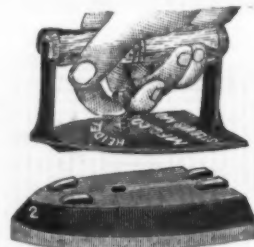
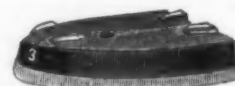


Fig. 1.—Heidel Cold Handle Sad Iron.

iron is cast in one piece, with four grooved lugs placed on top of the body, into which the top plate fits, the latter being held in by means of an automatic drop catch. An important feature is the space between the body of the iron and the top plate, which allows air to circulate freely, and thus prevents the handle from being heated. The handle is of wood, attached to the iron by uprights, while the iron is shaped like the old flat iron.



### The Trojan Nail Puller.

Hagen & Reid, Troy, N. Y., are putting on the market an improved form of nail puller, as illustrated herewith. The manu-



The Trojan Nail Puller.

facturers allude to the principal features in the construction of the nail puller as follows: The malleable-iron handle is fastened on the rod, thus insuring safety to the



hand; a greater length of stroke results in a sure grip being obtained upon the nail with less labor; the puller is made entirely of steel and malleable iron, and is designed to stand rough usage, and the jaws being milled out retain all the nature of the steel, much of which is lost when they are drop forged. The puller is nearly noiseless in operation, and the jaws are interchangeable.

### Taintor Saw Set.

Taintor Mfg. Company, Wiebusch & Hilger sole agents, 84-86 Chambers street, New York, are introducing a saw set, as

movement is first of the lower handle about the lower pivot, compressing the smaller spring and acting against the resistance offered by the larger spring. This action serves to clamp the teeth as above described. The moment this is accomplished, however, the movement transfers to the upper handle and thence to the forward pivot against the resistance offered by the tooth itself. While this is in progress the larger spring is being compressed. A third result is attained by still further exerting power upon the handles. After the bending has been accomplished whatever additional force is exerted serves to squeeze the tooth, thus setting it so that it does not spring back.

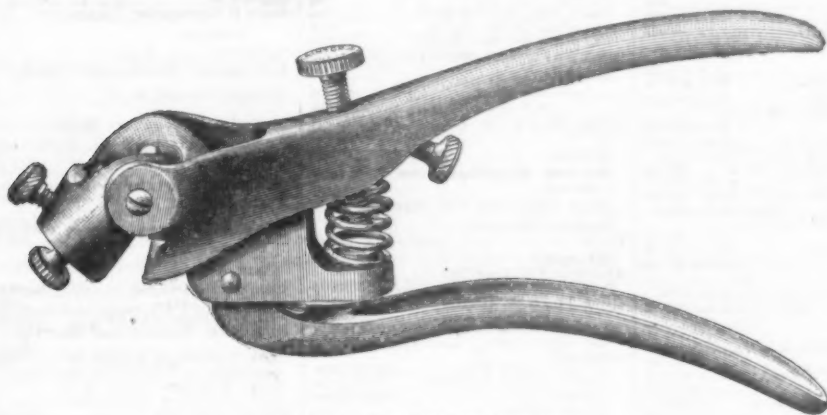


Fig. 1.—The Taintor Saw Set.

illustrated herewith. A general view of the device is given in Fig. 1, while Fig. 2 shows the punch clamping the saw tooth against the anvil. The saw set first grasps the saw tooth in a parallel vise, Fig. 2, and then bends it over; in this the manu-

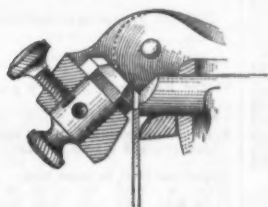


Fig. 2.—Section through Head of Taintor Saw Set, Showing Punch Clamping the Saw Tooth Against Anvil.

facturers claim that it differs from other saw sets. These two operations are accomplished by a single compression of the handles automatically without loss of time or exacting care upon the part of the operator. The handles of the tool are spread

By an inspection of the cuts it will be seen that the anvil against which the bending is done is placed angling—that is, out of the vertical—so as never to obstruct the view, and is furnished with a number of faces of different sizes. These faces, which are numbered for identification, serve to adapt the tool for use with saw teeth of different sizes. The throw of the punch against the anvil for the purpose of clamping the tooth is a fixed quantity and is sufficient to accommodate the thickest blades. The amount of bend, however, following from the compression of the handles is regulated by the vertical set screw shown inside of the larger spring. The position of this screw when adjusted is made positive against any accident in use by the smaller set screw placed at an angle between the handles, Fig. 3. The advantages claimed for the saw set by the manufacturers are as follows:

The construction of the set is such that not only the tooth being set is in plain sight, but those immediately preceding and following it; the end of the tooth being set is protected, rendering it impossible for it to curl; the set does not dent or break the tooth or buckle the saw; the set is quickly and easily adjusted to

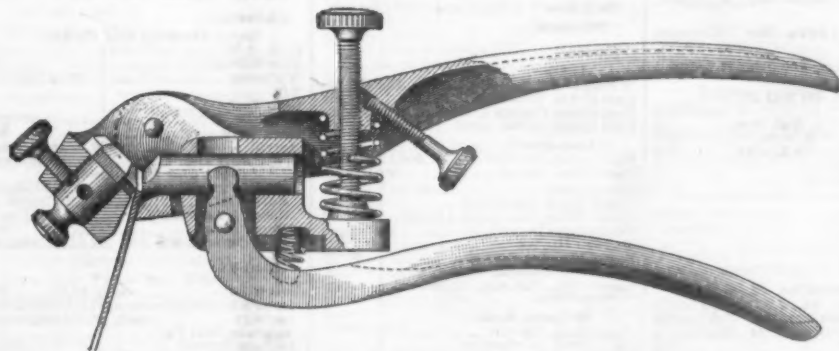


Fig. 3.—Longitudinal Section through Taintor Saw Set, Showing all the Working Parts.

and held apart by the combined action of two spiral springs of unequal strength, Fig. 3. The handles of levers are also unequally pivoted. It will be noticed that the tool consists of three principal parts—the two handles and the frame or head. When the handles are compressed the

length and to the pitch which it is desirable to give to the tooth; one motion bends the tooth into position, giving it the perfect form requisite for the best work, and then permanently sets it; the range of work that it is capable of doing is large, setting teeth from 5 to 14 points to the inch, and saws as narrow as 5-16 inch, including the tooth; the adjustment

is positive, and after the gauge is set for work it cannot slip; the leverage is powerful and is attended by no lost motion; it will not tire the operator's hand; it is not liable to slip off the tooth, and all parts are interchangeable.

The Trans-Missouri Association has reduced its freight rates from the Missouri River to Denver to \$4.15 per gross ton, making the through rate from Pittsburgh \$7.26, a reduction of \$1.85 per ton.

"The Possibilities of the Steam Yacht" is the subject of an interesting article by Lewis Herreshoff, a brother of the designer of the famous Gloriana, in the August number of the *North American Review*. Mr. Herreshoff thinks it would not be wise to place any actual limit on possible speed, and that it is within the bounds of reason to expect yachts of 35 miles an hour to be not uncommon within the next ten years.

### CONTENTS.

	PAGE.
Improved Straight-Line Engine. Illus.....	205
Steel Chimneys for Mercantile Buildings....	209
An Improved Screw Machine. Illustrated..	210
Bidding for Heavy Guns.....	210
Omaha's Bridge Case Decided.....	210
The Hercules Electric Motor and Dynamo. Illustrated.....	211
The Short Cut in Steel Rolling.....	121
Importing Tin-Plate Workers.....	211
A Chicago Workingman's Hotel.....	212
Duplex Forging Press. Illustrated.....	212
The Canet Gun Carriage. Illustrated.....	213
The Plate-Mill Scale.....	214
Lake Michigan's Pride.....	214
Making Chain Links. Illustrated.....	215
The Alleged Cooper & Hewitt Sale.....	216
The Week.....	216
Editorials:	
The Middle-Man in Trade.....	218
Ocean Postal Service.....	218
Economy Rating of Engines and Boilers	219
Old Rails and Wrought Scrap.....	219
Strikers as Conspirators.....	219
Corporations in Mercantile Business.....	219
Personal.....	220
The Abendroth & Root Boiler in Philadelphia.....	220
Responsibility for Acts of Employees.....	220
The Production of Aluminum.....	221
Washington News.....	221
The Taylor Producer.....	222
Manufacturing: Iron and Steel, Machinery, Hardware, Miscellaneous.....	222-223
Curved Arms in Pulleys.....	223
Trade Report: Chicago, Philadelphia, Pittsburgh, Cincinnati, Cleveland, Louisville, Detroit, St. Louis, New York, Financial, Imports, Coal Market, Metal Market, New York Metal Exchange, British Iron and Metal Markets, Paints and Colors.....	224-229
Hardware: Condition of Trade, Notes on Prices, Trade Notes, A New Wire-Nail Mill, It Is Reported—, Price-Lists, Circulars, &c., Foreign Trade, Foreign Notes, Exports.....	230-234
Hege's Lock-Joint Pavement. Illustrated.	235
Zeller's Automatic Safety Gate.....	235
Schmuck's Mop Wringer. Illustrated.....	235
Trackless Hay Elevator. Illustrated.....	236
Standard Elevator Bucket. Illustrated.....	236
The Heidel Cold Handle Sad Iron. Illus....	236
The Trojan Nail Puller. Illustrated.....	236
Taintor Saw Set. Illustrated.....	237
Current Hardware Prices.....	238-243
Current Metal Prices.....	244

# CURRENT HARDWARE PRICES.

AUGUST 5, 1891.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' Prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers' name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

## Adjusters, Blind.

Domestic..... \$ dos \$3.00, 33¢  
 Excelsior..... \$ dos \$10.00..... 50¢  
 Washburn's Self-Locking..... 20¢  
 Washburn's Self-Locking..... 20¢

## Ammunition—See Caps, Cartridges, Shells, &c.

## Anvils.

Eagle Anvil, \$ 10¢..... 15¢  
 Peter Wright's..... 11¢  
 Armistage's Mouse Hole..... 10¢  
 Armistage's Mouse Hole, Extra..... 12¢  
 Trenton..... 10¢  
 Wilkinson's..... 10¢  
 Moore & Barnes Mfg. Co..... 33¢

## Anvil Vise and Drill—

Miller Falls Co., \$18.00..... 20¢  
 Cheney Anvil and Vise..... 25¢  
 Allen Anvil and Vise, \$3.00..... 40¢  
 Star..... 45¢

## Apple Parers—See Parers, Apple, &c.

## Augers and Bits—

Douglas Mfg. Co..... 70¢  
 Wm. A. Ives & Co..... 70¢  
 Humphreysville Mfg. Co..... 70¢  
 French, Swift & Co. (F. H. Beecher, P. S. & W. Co.)..... 70¢  
 Rockford Bit Company..... 70¢  
 Cook's, Douglas Mfg. Co..... 55¢  
 Cook's, N. H. Copper Co. 50¢  
 Ives' Circular Lip..... 30¢  
 Patent Solid Head..... 30¢  
 C. E. Jennings & Co., No. 10, extension lip..... 40¢  
 C. E. Jennings & Co., No. 30..... 60¢  
 C. E. Jennings & Co., Auger Bits, set, 32¢  
 Lewis' Patent Single Twist..... 45¢  
 Russell Jennings' Augers and Bits..... 30¢  
 Imitation Jennings' Bits..... 30¢  
 Snell's Jennings' Pattern..... 30¢  
 Pugh's Black..... 30¢  
 Rockford, Jennings' Pattern..... 30¢  
 Car Bits, P. S. & W. Co..... 60¢  
 Snell's Car Bits..... 60¢  
 L. Hommedieu Car Bits..... 15¢  
 Forster's Pat. Auger Bits..... 20¢  
 Cincinnati Bell-Hangers' Bits..... 30¢

## Bit Stock Drills—

Morse Twist Drills..... 50¢  
 Standard..... 50¢  
 Cleveland..... 50¢  
 Syracuse, for metal..... 50¢  
 Syracuse, for wood (wood lip)..... 50¢  
 Williams' or Holt's, for metal..... 50¢  
 Williams' or Holt's, for wood..... 40¢  
 Cincinnati, for wood..... 30¢  
 Cincinnati, for metal..... 45¢

## Expansive Bits—

Clark's small, \$15; large, \$30, 35¢  
 Ives' No. 4, \$ dos 60¢..... 40¢  
 Swan's..... 40¢  
 Stearns' No. 1, \$25; No. 2, \$22..... 30¢  
 Stearns' No. 2, \$48..... 35¢

## Gimlet Bits—

Common..... \$ gross \$2.75 @ \$3.25  
 Diamond..... \$ dos \$1.10..... 25¢  
 Bee..... 25¢  
 Double Cut, Cl. Valley Mfg. Co..... 30¢  
 Double Cut, Hartwell's, \$ gro..... 35¢  
 Double Cut, Douglas..... 40¢  
 Double Cut, Ives..... 60¢

## Hollow Augers—

Ives..... 33¢  
 French, Swift & Co..... 33¢  
 Douglas..... 33¢  
 Bonney's Adjustable, \$ dos \$48..... 40¢  
 Stearns'..... 40¢  
 Ives' Expansive, each \$4.50..... 50¢  
 Universal Expansive, each \$4.50..... 30¢  
 Wood's..... 35¢  
 Cincinnati Adjustable..... 25¢  
 Cincinnati Standard..... 25¢  
 Ship Augers and Bits—  
 L'Hommedieu's..... 15¢  
 Watrous'..... 15¢  
 Snell's..... 15¢  
 Snell's Ship Auger Pat't'n Car Bits..... 15¢

## Awl Hints—See Hints, Awl.

## Awls, Brad Sets, &c.—

Awls, Sewing, Common \$ gr \$1.70, 45¢  
 Awls, Should. Peg, \$ gr \$2.45, 50¢  
 Awls, Pat. Peg, \$ gr \$3.50, 50¢  
 Awls, Shouldered Brad, 2.70 \$ gr..... 35¢  
 Awls, Handled Brad, \$7.50 \$ gr..... 45¢  
 Awls, Handled Scratch \$ gr, \$7.50, 35¢  
 Awls, Socket Scratch, \$ dos, \$1.50, 35¢

## Awl and Tool Sets—See Sets, Awl and Tool.

## Axes—

First quality, best brands, \$7.00 @ \$7.50  
 First qual., other brands, 6.75 @ 7.50  
 Second quality..... 6.00 @ 6.50

## Axle Trusses—See Trusses, Axle.

## Axles—

No. 1, 4¢ @ 5¢, No. 2, 5¢ @ 6¢  
 No. 7 to 14..... 5¢ cash  
 No. 15 to 18..... 4.75 @ 5.00  
 No. 19 to 22..... 7.00 @ 7.50  
 Concord Axles, loose collar..... 5¢  
 Concord Axles, solid collar..... 6¢  
 National Tubular Self-Oiling..... 35¢

## Bag Holders—See Holders, Bag.

## Balances—

Spring Balances..... 40¢  
 Chatillon, \$ dos..... \$0.80 0.95 1.75 net  
 Chatillon Straight Balances..... 40¢  
 Chatillon Circular Balances..... 50¢

## Bars.

Cast Steel..... \$ dos 3 1/2¢  
 Iron, Steel Points..... \$ dos 3¢

## Basins, Wash—

Standard Fiberware, No. 1, 10 1/2-inch, \$2; 12-inch, \$2.25; 15 1/2-inch, \$2.75; 16-inch, \$3.25

## Beams, Scale—

Scale Beams, List Jan. 12, '82..... 50¢  
 Chatillon's No. 1..... 40¢  
 Chatillon's No. 2..... 50¢  
 Custer's..... 33¢

## Benters—

Dover..... \$ dos \$1.50  
 Duplex (Standard Co.)..... \$ dos \$1.25  
 Rival (Standard Co.)..... \$ dos \$1.00  
 Duplex Extra Heavy (Standard Co.)..... \$ dos \$3.50

## Benters—

Double (H. & R. Mfg. Co.) \$ gro. No. 0, \$12.00; No. 1, \$15.00; No. 2, \$18.00; No. 3, \$22.00; No. 4, \$25.00; No. 5, \$28.00; No. 6, \$32.00; No. 7, \$35.00; No. 8, \$38.00; No. 9, \$42.00; No. 10, \$45.00; No. 11, \$48.00; No. 12, \$52.00; No. 13, \$55.00; No. 14, \$58.00; No. 15, \$62.00; No. 16, \$65.00; No. 17, \$68.00; No. 18, \$72.00; No. 19, \$75.00; No. 20, \$78.00; No. 21, \$82.00; No. 22, \$85.00; No. 23, \$88.00; No. 24, \$92.00; No. 25, \$95.00; No. 26, \$98.00; No. 27, \$102.00; No. 28, \$105.00; No. 29, \$108.00; No. 30, \$112.00; No. 31, \$115.00; No. 32, \$118.00; No. 33, \$122.00; No. 34, \$125.00; No. 35, \$128.00; No. 36, \$132.00; No. 37, \$135.00; No. 38, \$138.00; No. 39, \$142.00; No. 40, \$145.00; No. 41, \$148.00; No. 42, \$152.00; No. 43, \$155.00; No. 44, \$158.00; No. 45, \$162.00; No. 46, \$165.00; No. 47, \$168.00; No. 48, \$172.00; No. 49, \$175.00; No. 50, \$178.00; No. 51, \$182.00; No. 52, \$185.00; No. 53, \$188.00; No. 54, \$192.00; No. 55, \$195.00; No. 56, \$198.00; No. 57, \$202.00; No. 58, \$205.00; No. 59, \$208.00; No. 60, \$212.00; No. 61, \$215.00; No. 62, \$218.00; No. 63, \$222.00; No. 64, \$225.00; No. 65, \$228.00; No. 66, \$232.00; No. 67, \$235.00; No. 68, \$238.00; No. 69, \$242.00; No. 70, \$245.00; No. 71, \$248.00; No. 72, \$252.00; No. 73, \$255.00; No. 74, \$258.00; No. 75, \$262.00; No. 76, \$265.00; No. 77, \$268.00; No. 78, \$272.00; No. 79, \$275.00; No. 80, \$278.00; No. 81, \$282.00; No. 82, \$285.00; No. 83, \$288.00; No. 84, \$292.00; No. 85, \$295.00; No. 86, \$298.00; No. 87, \$302.00; No. 88, \$305.00; No. 89, \$308.00; No. 90, \$312.00; No. 91, \$315.00; No. 92, \$318.00; No. 93, \$322.00; No. 94, \$325.00; No. 95, \$328.00; No. 96, \$332.00; No. 97, \$335.00; No. 98, \$338.00; No. 99, \$342.00; No. 100, \$345.00; No. 101, \$348.00; No. 102, \$352.00; No. 103, \$355.00; No. 104, \$358.00; No. 105, \$362.00; No. 106, \$365.00; No. 107, \$368.00; No. 108, \$372.00; No. 109, \$375.00; No. 110, \$378.00; No. 111, \$382.00; No. 112, \$385.00; No. 113, \$388.00; No. 114, \$392.00; No. 115, \$395.00; No. 116, \$398.00; No. 117, \$402.00; No. 118, \$405.00; No. 119, \$408.00; No. 120, \$412.00; No. 121, \$415.00; No. 122, \$418.00; No. 123, \$422.00; No. 124, \$425.00; No. 125, \$428.00; No. 126, \$432.00; No. 127, \$435.00; No. 128, \$438.00; No. 129, \$442.00; No. 130, \$445.00; No. 131, \$448.00; No. 132, \$452.00; No. 133, \$455.00; No. 134, \$458.00; No. 135, \$462.00; No. 136, \$465.00; No. 137, \$468.00; No. 138, \$472.00; No. 139, \$475.00; No. 140, \$478.00; No. 141, \$482.00; No. 142, \$485.00; No. 143, \$488.00; No. 144, \$492.00; No. 145, \$495.00; No. 146, \$498.00; No. 147, \$502.00; No. 148, \$505.00; No. 149, \$508.00; No. 150, \$512.00; No. 151, \$515.00; No. 152, \$518.00; No. 153, \$522.00; No. 154, \$525.00; No. 155, \$528.00; No. 156, \$532.00; No. 157, \$535.00; No. 158, \$538.00; No. 159, \$542.00; No. 160, \$545.00; No. 161, \$548.00; No. 162, \$552.00; No. 163, \$555.00; No. 164, \$558.00; No. 165, \$562.00; No. 166, \$565.00; No. 167, \$568.00; No. 168, \$572.00; No. 169, \$575.00; No. 170, \$578.00; No. 171, \$582.00; No. 172, \$585.00; No. 173, \$588.00; No. 174, \$592.00; No. 175, \$595.00; No. 176, \$598.00; No. 177, \$602.00; No. 178, \$605.00; No. 179, \$608.00; No. 180, \$612.00; No. 181, \$615.00; No. 182, \$618.00; No. 183, \$622.00; No. 184, \$625.00; No. 185, \$628.00; No. 186, \$632.00; No. 187, \$635.00; No. 188, \$638.00; No. 189, \$642.00; No. 190, \$645.00; No. 191, \$648.00; No. 192, \$652.00; No. 193, \$655.00; No. 194, \$658.00; No. 195, \$662.00; No. 196, \$665.00; No. 197, \$668.00; No. 198, \$672.00; No. 199, \$675.00; No. 200, \$678.00; No. 201, \$682.00; No. 202, \$685.00; No. 203, \$688.00; No. 204, \$692.00; No. 205, \$695.00; No. 206, \$698.00; No. 207, \$702.00; No. 208, \$705.00; No. 209, \$708.00; No. 210, \$712.00; No. 211, \$715.00; No. 212, \$718.00; No. 213, \$722.00; No. 214, \$725.00; No. 215, \$728.00; No. 216, \$732.00; No. 217, \$735.00; No. 218, \$738.00; No. 219, \$742.00; No. 220, \$745.00; No. 221, \$748.00; No. 222, \$752.00; No. 223, \$755.00; No. 224, \$758.00; No. 225, \$762.00; No. 226, \$765.00; No. 227, \$768.00; No. 228, \$772.00; No. 229, \$775.00; No. 230, \$778.00; No. 231, \$782.00; No. 232, \$785.00; No. 233, \$788.00; No. 234, \$792.00; No. 235, \$795.00; No. 236, \$798.00; No. 237, \$802.00; No. 238, \$805.00; No. 239, \$808.00; No. 240, \$812.00; No. 241, \$815.00; No. 242, \$818.00; No. 243, \$822.00; No. 244, \$825.00; No. 245, \$828.00; No. 246, \$832.00; No. 247, \$835.00; No. 248, \$838.00; No. 249, \$842.00; No. 250, \$845.00; No. 251, \$848.00; No. 252, \$852.00; No. 253, \$855.00; No. 254, \$858.00; No. 255, \$862.00; No. 256, \$865.00; No. 257, \$868.00; No. 258, \$872.00; No. 259, \$875.00; No. 260, \$878.00; No. 261, \$882.00; No. 262, \$885.00; No. 263, \$888.00; No. 264, \$892.00; No. 265, \$895.00; No. 266, \$898.00; No. 267, \$902.00; No. 268, \$905.00; No. 269, \$908.00; No. 270, \$912.00; No. 271, \$915.00; No. 272, \$918.00; No. 273, \$922.00; No. 274, \$925.00; No. 275, \$928.00; No. 276, \$932.00; No. 277, \$935.00; No. 278, \$938.00; No. 279, \$942.00; No. 280, \$945.00; No. 281, \$948.00; No. 282, \$952.00; No. 283, \$955.00; No. 284, \$958.00; No. 285, \$962.00; No. 286, \$965.00; No. 287, \$968.00; No. 288, \$972.00; No. 289, \$975.00; No. 290, \$978.00; No. 291, \$982.00; No. 292, \$985.00; No. 293, \$988.00; No. 294, \$992.00; No. 295, \$995.00; No. 296, \$998.00; No. 297, \$1002.00; No. 298, \$1005.00; No. 299, \$1008.00; No. 300, \$1012.00; No. 301, \$1015.00; No. 302, \$1018.00; No. 303, \$1022.00; No. 304, \$1025.00; No. 305, \$1028.00; No. 306, \$1032.00; No. 307, \$1035.00; No. 308, \$1038.00; No. 309, \$1042.00; No. 310, \$1045.00; No. 311, \$1048.00; No. 312, \$1052.00; No. 313, \$1055.00; No. 314, \$1058.00; No. 315, \$1062.00; No. 316, \$1065.00; No. 317, \$1068.00; No. 318, \$1072.00; No. 319, \$1075.00; No. 320, \$1078.00; No. 321, \$1082.00; No. 322, \$1085.00; No. 323, \$1088.00; No. 324, \$1092.00; No. 325, \$1095.00; No. 326, \$1098.00; No. 327, \$1102.00; No. 328, \$1105.00; No. 329, \$1108.00; No. 330, \$1112.00; No. 331, \$1115.00; No. 332, \$1118.00; No. 333, \$1122.00; No. 334, \$1125.00; No. 335, \$1128.00; No. 336, \$1132.00; No. 337, \$1135.00; No. 338, \$1138.00; No. 339, \$1142.00; No. 340, \$1145.00; No. 341, \$1148.00; No. 342, \$1152.00; No. 343, \$1155.00; No. 344, \$1158.00; No. 345, \$1162.00; No. 346, \$1165.00; No. 347, \$1168.00; No. 348, \$1172.00; No. 349, \$1175.00; No. 350, \$1178.00; No. 351, \$1182.00; No. 352, \$1185.00; No. 353, \$1188.00; No. 354, \$1192.00; No. 355, \$1195.00; No. 356, \$1198.00; No. 357, \$1202.00; No. 358, \$1205.00; No. 359, \$1208.00; No. 360, \$1212.00; No. 361, \$1215.00; No. 362, \$1218.00; No. 363, \$1222.00; No. 364, \$1225.00; No. 365, \$1228.00; No. 366, \$1232.00; No. 367, \$1235.00; No. 368, \$1238.00; No. 369, \$1242.00; No. 370, \$1245.00; No. 371, \$1248.00; No. 372, \$1252.00; No. 373, \$1255.00; No. 374, \$1258.00; No. 375, \$1262.00; No. 376, \$1265.00; No. 377, \$1268.00; No. 378, \$1272.00; No. 379, \$1275.00; No. 380, \$1278.00; No. 381, \$1282.00; No. 382, \$1285.00; No. 383, \$1288.00; No. 384, \$1292.00; No. 385, \$1295.00; No. 386, \$1298.00; No. 387, \$1302.00; No. 388, \$1305.00; No. 389, \$1308.00; No. 390, \$1312.00; No. 391, \$1315.00; No. 392, \$1318.00; No. 393, \$1322.00; No. 394, \$1325.00; No. 395, \$1328.00; No. 396, \$1332.00; No. 397, \$1335.00; No. 398, \$1338.00; No. 399, \$1342.00; No. 400, \$1345.00; No. 401, \$1348.00; No. 402, \$1352.00; No. 403, \$1355.00; No. 404, \$1358.00; No. 405, \$1362.00; No. 406, \$1365.00; No. 407, \$1368.00; No. 408, \$1372.00; No. 409, \$1375.00; No. 410, \$1378.00; No. 411, \$1382.00; No. 412, \$1385.00; No. 413, \$1388.00; No. 414, \$1392.00; No. 415, \$1395.00; No. 416, \$1398.00; No. 417, \$1402.00; No. 418, \$1405.00; No. 419, \$1408.00; No. 420, \$1412.00; No. 421, \$1415.00; No. 422, \$1418.00; No. 423, \$1422.00; No. 424, \$1425.00; No. 425, \$1428.00; No. 426, \$1432.00; No. 427, \$1435.00; No. 428, \$1438.00; No. 429, \$1442.00; No. 430, \$1445.00; No. 431, \$1448.00; No. 432, \$1452.00; No. 433, \$1455.00; No. 434, \$1458.00; No. 435, \$1462.00; No. 436, \$1465.00; No. 437, \$1468.00; No. 438, \$1472.00; No. 439, \$1475.00; No. 440, \$1478.00; No. 441, \$1482.00; No. 442, \$1485.00; No. 443, \$1488.00; No. 444, \$1492.00; No. 445, \$1495.00; No. 446, \$1498.00; No. 447, \$1502.00; No. 448, \$1505.00; No. 449, \$1508.00; No. 450, \$1512.00; No. 451, \$1515.00; No. 452, \$1518.00; No. 453, \$1522.00; No. 454, \$1525.00; No. 455, \$1528.00; No. 456, \$1532.00; No. 457, \$1535.00; No. 458, \$1538.00; No. 459, \$1542.00; No. 460, \$1545.00; No. 461, \$1548.00; No. 462, \$1552.00; No. 463, \$1555.00; No. 464, \$1558.00; No. 465, \$1562.00; No. 466, \$1565.00; No. 467, \$1568.00; No. 468, \$1572.00; No. 469, \$1575.00; No. 470, \$1578.00; No. 471, \$1582.00; No. 472, \$1585.00; No. 473, \$1588.00; No. 474, \$1592.00; No. 475, \$1595.00; No. 476, \$1598.00; No. 477, \$1602.00; No. 478, \$1605.00; No. 479, \$1608.00; No. 480, \$1612.00; No. 481, \$1615.00; No. 482, \$1618.00; No. 483, \$1622.00; No. 484, \$1625.00; No. 485, \$1628.00; No. 486, \$1632.00; No. 487, \$1635.00; No. 488, \$1638.00; No. 489, \$1642.00; No. 490, \$1645.00; No. 491, \$1648.00; No. 492, \$1652.00; No. 493, \$1655.00; No. 494, \$1658.00; No. 495, \$1662.00; No. 496, \$1665.00; No. 497, \$1668.00; No. 498, \$1672.00; No. 499, \$1675.00; No. 500, \$1678.00; No. 501, \$1682.00; No. 502, \$1685.00; No. 503, \$1688.00; No. 504, \$1692.00; No. 505, \$1695.00; No. 506, \$1698.00; No. 507, \$1702.00; No. 508, \$1705.00; No. 509, \$1708.00; No. 510, \$1712.00; No. 511, \$1715.00; No. 512, \$1718.00; No. 513, \$1722.00; No. 514, \$1725.00; No. 515, \$1728.00; No. 516, \$1732.00; No. 517, \$1735.00; No. 518, \$1738.00; No. 519, \$1742.00; No. 520, \$1745.00; No. 521, \$1748.00; No. 522, \$1752.00; No. 523, \$1755.00; No. 524, \$1758.00; No. 525, \$1762.00; No. 526, \$1765.00; No. 527, \$1768.00; No. 528, \$1772.00; No. 529, \$1775.00; No. 530, \$1778.00; No. 531, \$1782.00; No. 532, \$1785.00; No. 533, \$1788.00; No. 534, \$1792.00; No. 535, \$1795.00; No. 536, \$1798.00; No. 537, \$1802.00; No. 538, \$1805.00; No. 539, \$1808.00; No. 540, \$1812.00; No. 541, \$1815.00; No. 542, \$1818.00; No. 543, \$1822.00; No. 544, \$1825.00; No. 545, \$1828.00; No. 546, \$1832.00; No. 547, \$1835.00; No. 548, \$1838.00; No. 549, \$1842.00; No. 550, \$1845.00; No. 551, \$1848.00; No. 552, \$1852.00; No. 553, \$1855.00; No. 554, \$1858.00; No. 555, \$1862.00; No. 556, \$1865.



**Clamps—**

R. I. Tool Co.'s Wrought Iron.....25¢  
Adjustable, Cincinnati.....15¢  
Adjustable, Cincinnati.....15¢  
Adjustable, Cincinnati.....15¢  
Stearns' Adjustable Cabinet and Cor-  
ner.....30¢  
Cabinet, Sargent's.....30¢  
Carriage Makers', Sargent's.....70¢  
Carriage Makers', P. S. & W. Co. 40¢  
Eberhard Mfg. Co.....40¢  
Parallel, C. H. Bealy & Co.....25¢  
Warner's.....40¢  
Saw Clamps, see Vises, Saw Filers.  
Carpenters', Cincinnati.....25¢

**Cleavers.**

Butchers'.  
Bradley's.....25¢  
L. & J. White.....20¢  
Beatty's.....40¢  
New Haven Edge Tool Co.'s.....40¢  
P. S. & W. Co. 30¢  
Foster Bros.....30¢  
Schulte, Lohoff & Co.....40¢

**Clips—**

Norway, Axle, 1/4 & 5-16.....55¢  
2nd grade Norway Axle, 1/4 & 5-16 65¢  
Superior Axle Clips.....60¢  
Wrought Spring Bar Clips, 5-16.....60¢  
Norway Iron Felice Clips.....5¢  
Steel Felice Clips.....5¢  
Baker Axle Clips.....15¢

Cloth and Netting, Wire—See  
Wire, &c.

**Cocks.**

Hardware list.....50¢

**Coffee Mills—See Mills, Coffee.****Collars, Dog, &c.**

Medford Fancy Goods Co.....40¢  
Embossed, Gilt, Pope & Steven's list  
30¢  
Leather, Pope & Steven's list.....40¢  
Brass, Pope & Steven's list.....40¢  
Chapman Mfg. Company.....50¢

**Combs, Curry.**

Fitch's.....60¢  
Rubber, per doz \$10.00.....20¢  
Kellogg's.....50¢  
Sweet & Clark's.....50¢

**Compasses, Dividers, &c.**

Compasses, Callipers, Dividers, 70¢  
Bemis & Call Co.'s.....70¢  
Dividers.....70¢  
Compasses & Callipers.....70¢  
Wing and Inside or Outside.....70¢  
Double.....70¢  
(Call's Pat. Inside).....70¢  
Excelsior.....70¢  
J. Stevens & Co.'s.....70¢  
Starrett's.....70¢  
Spring Callipers and Dividers.....70¢  
Lock Callipers and Dividers.....70¢  
Combination Dividers.....70¢  
Coopers' Tools—See Tools, Coopers'.

**Cord—**

Sash.  
Common.....10¢  
Patent, good quality.....12¢  
White Cotton Braided, fair.....24¢  
Common Russia Sash.....15¢  
Patent Russia Sash.....15¢  
Cable Laid Italian Sash.....22¢  
In-la Cable Laid Sash.....12¢  
Silver Lace.....25¢  
A Quality White, 50¢.....25¢  
B Quality White, 30¢.....10¢  
C Quality White, 30¢.....10¢  
Sylvan Spring Extra Braided White, 74¢  
Sylvan Spring, Extra Braided, Drab, 39¢  
Semper Idem Braided, White.....30¢  
Egyptian, India Hemp, Braided.....25¢  
Massachusetts, White.....35¢  
Braid, White Cotton, 50¢.....30¢  
Braid, Drab Cotton, 50¢.....30¢  
Braid, Italian Hemp, 50¢.....30¢  
Braid, Linen, 50¢.....30¢  
Tate's Cotton Braided, White.....25¢  
Wire Picture.  
Braided or Twisted.....75¢  
Corkscrews—See Screws, Cork.  
Cork Knives and Cutters—See  
Knives, Cork.  
Crackers, Nut—  
Table (H. & B. Mfg. Co.).....40¢  
Blake's Pattern.....40¢  
Turner & Seymour Mfg. Co.....50¢  
Cradles—  
Grain.....50¢  
Crayons.  
White Crayons, gross.....10¢  
D. M. Stewart Mfg. Co., Metal Work-  
ers, gr. \$2.50.....25¢  
D. M. Stewart Mfg. Co., Rolling Mill,  
gr. \$2.50.....25¢  
See also Chalk.  
Crew Bars—See Bars, Crew.  
Curry Combs—See Combs, Curry.  
Curtain Pins—See Pins, Curtain.  
Cutters—  
Meat.  
Dixon's.....40¢  
Nos. 1, 2, 3, 4.....40¢  
\$14.00 \$17.00 \$19.00 \$20.00  
Woodruff's.....40¢  
Nos. 1, 2, 3, 4.....40¢  
\$15.00 \$18.00 \$19.00  
Hales Pattern.....70¢  
Nos. 1, 2, 3, 4.....70¢  
\$27.00 \$32.00 \$35.00  
American.....30¢  
Nos. 1, 2, 3, 4.....30¢  
Each.....\$5 \$7 \$10 \$25 \$50 \$90  
Enterprise.....30¢  
Nos. 1, 2, 3, 4.....30¢  
Each.....\$2.50 \$3.50 \$4.50 \$6.50  
Great American Meat Cutter.....125¢  
Nos. 1, 2, 3, 4.....125¢  
Each.....\$2.00 \$2.75 \$3.00 \$3.50 \$4.00  
Miles' Challenge.....45¢  
Nos. 1, 2, 3, 4.....45¢  
\$22.00 \$30.00 \$40.00  
Home No. 1.....\$25.00 \$35.00 \$50.00

**Draw Cut, each:**

Nos. 1, 2, 3, 4.....20¢  
\$50 \$75 \$90 \$225.....20¢  
Great American.....30¢  
Beef Shavers (Enterprise).....20¢  
Little Giant.....50¢  
Chadborn's Smoked Beef Cutter, per doz  
\$60.00

**Tobacco.**

Champion.....20¢  
Wood Bottom.....20¢  
All Iron.....20¢  
Nashua Lock Co.'s.....20¢  
Wilson's.....20¢  
Sargent's.....20¢  
Acme.....20¢

**Washer.**

Smith's Pat.....\$12.00, 20¢  
Johnson's.....\$11.00, 33¢  
Penny's.....\$11.00, 33¢  
Appleton's.....\$11.00, 33¢  
Bonney's.....\$11.00, 33¢  
Cincinnati.....\$11.00, 33¢

**Dampers, &c.**

Dampers, Buffalo.....40¢  
Buffalo Damper Clips.....40¢  
Crown Damper.....40¢  
Excelstor.....40¢

**Diggers, Post Hole, &c.**

Samson Post Hole Digger, per doz \$36.00,  
25¢  
Pletcher Post Hole Augers, per doz \$36.00,  
25¢  
Lead's.....\$8.00, 20¢  
Vaughan's Post Hole Auger, per doz \$13.00,  
40¢  
Kohler's Little Giant.....\$18.00,  
40¢  
Kohler's Hercules.....\$18.00,  
40¢  
Kohler's New Champion.....\$18.00,  
40¢  
Schneider.....\$18.00,  
40¢  
Ryan's Post Hole Diggers.....\$24.00,  
40¢  
Cronk's Post Hole Diggers.....\$24.00,  
40¢  
Gibbs Post Hole Digger, per doz \$30.00,  
45¢  
Imperial, per doz \$18.00, 45¢

**Dividers—**

See Compasses.

**Dog Collars—See Collars, Dog, &c.****Door Springs—See Springs, Door.****Drawers.**

Money, per doz.....\$12.50

**Drawing Knives—See Knives, Drawing.****Drills and Drill Stocks—**

Blacksmiths'.....each \$1.75  
Blacksmiths' Self-Feeding, each \$7.50, 20¢  
Breast, P. S. & W.....40¢  
Breast, Wilson's.....40¢  
Breast, Millers Falls.....\$3.00, 25¢  
Breast, Bartholomew's.....\$2.50,  
25¢  
Ratchet, Merrill's.....20¢  
Ratchet, Ingersoll.....20¢  
Ratchet, Parker's.....20¢  
Ratchet, Whitney's.....20¢  
Ratchet, Weston's.....20¢  
Ratchet, Moore's Triple Action.....20¢  
Ratchet, Curtis & Curtis.....30¢  
Whitney's Hand Drill, Plain, \$11.00,  
Adjustable, \$12.00.....20¢  
Wilson's Drill Stock.....\$1.75, 15¢  
Automatic Boring Tools.....\$1.75, 15¢  
Twist Drills—  
Morse.....50¢  
Standard.....50¢  
Syracuse (Metal list).....50¢  
Cleveland.....50¢  
Williams.....50¢  
New Process.....50¢  
Graham's Pat. Groove Shank 50¢  
Drill Bits—See Augers and Bits.  
Drill Chucks—See Chucks.  
Dripping Pans—See Pans, Dripping.  
Drivers, Screw.  
Douglas Mfg. Co.....20¢  
Dixons.....20¢  
Buck Bros.....30¢  
Stanley & L. Co.'s  
Varnished Handles.....65¢  
Black Handles.....65¢  
Sargent & Co.'s  
No. 1 Forged Blade.....60¢  
Nos. 2, 3, 4 and 60.....60¢  
P. S. & W.....70¢  
Knapp & Cowles:  
No. 1.....60¢  
No. 2.....60¢  
No. 3.....60¢  
Nos. 4 and 60, Acme and Ideal.....50¢  
Stearns.....35¢  
Gay & Parsons.....35¢  
Champion.....25¢  
Clark's Pat.....30¢  
Crawford's Adjustable.....30¢  
Ellrich's Spiral, new list.....25¢  
Kolb's Common Sense.....\$6.00, 25¢  
Syracuse Screw-Driver Bits.....30¢  
Screw-Driver Bits.....\$6.00, 25¢  
Screw-Driver Bits, Parr's.....\$6.00, 25¢  
Parr's Hol. Hdl. Sets, No. 3, \$13.00,  
25¢  
P. D. & Co.'s all Steel.....50¢  
Cincinnati.....50¢  
Brace-Screw Drivers.....25¢  
Buck Bros' Screw-Driver Bits.....25¢

**Egg Beaters—See Beaters, Egg.****Egg Pouchers—See Pouchers, Egg.****Electric Bell Sets—See Bells, Elec- tric.****Emery—No. 4 to No. 54 to Flour CF.**

Kegs, per doz.....40¢  
Nos. 1, 2, 3, 4.....40¢  
Nos. 5, 6, 7, 8.....40¢  
Nos. 9, 10, 11, 12.....40¢  
Nos. 13, 14, 15, 16.....40¢  
Nos. 17, 18, 19, 20.....40¢  
Nos. 21, 22, 23, 24.....40¢  
Nos. 25, 26, 27, 28.....40¢  
Nos. 29, 30, 31, 32.....40¢  
Nos. 33, 34, 35, 36.....40¢  
Nos. 37, 38, 39, 40.....40¢  
Nos. 41, 42, 43, 44.....40¢  
Nos. 45, 46, 47, 48.....40¢  
Nos. 49, 50, 51, 52.....40¢  
Nos. 53, 54, 55, 56.....40¢  
Nos. 57, 58, 59, 60.....40¢  
Nos. 61, 62, 63, 64.....40¢  
Nos. 65, 66, 67, 68.....40¢  
Nos. 69, 70, 71, 72.....40¢  
Nos. 73, 74, 75, 76.....40¢  
Nos. 77, 78, 79, 80.....40¢  
Nos. 81, 82, 83, 84.....40¢  
Nos. 85, 86, 87, 88.....40¢  
Nos. 89, 90, 91, 92.....40¢  
Nos. 93, 94, 95, 96.....40¢  
Nos. 97, 98, 99, 100.....40¢

**Enamelled and Tinned Ware—**

See Ware, Hollow.

**Escutcheon Pins—See Pins, Es- cutcheon.****Escutcheons.**

Door Lock.....Same dis as Door Locks.  
Brass Thread.....60¢  
Wood.....25¢

**Expanded Metal.**

List No. 5.

Lathing.....10¢  
Fencing, Painted Sheets.....20¢  
Netting, Painted Sheets.....20¢  
Door Mats, Galvanized.....25¢  
Window Guards, Painted.....15¢  
Tree Guards, Painted.....15¢

**Fasteners, Blind—**

Mackrell's.....\$1.00, 20¢  
Van Sand's Screw Pat. \$15 gr. 60¢  
Van Sand's Old Pat. \$15 gr. 60¢  
Washington's Old Pat. \$15 gr. 60¢  
Merriman's.....new list.  
Austin & Eddy No. 2008 gr. 60¢  
Security Gravity, gr. 60¢

**Faucets—**

Fenn's.....40¢  
Bohren's Pat. Rubber Ball.....25¢  
Fenn's Cork Stoppers.....30¢  
Frary's Pat. Petroleum.....40¢  
B. & L. B. Co.  
West's Lock, Open and Shut Key.....50¢  
Star Metal Plug, new list.....40¢  
Lockport, Metal Plug, reduced list.....60¢  
Metallic Pin, Leather Lined.....60¢  
Cork Lined.....70¢  
Burnside's Red Cedar.....50¢  
Burnside's Red Cedar, bbl lots.....50¢  
John Sommers  
Fearless Best Block Tin Key.....40¢  
LXI, 1st quality, Cork Lined.....50¢  
Diamond Lock.....40¢  
Perfection, Fla. Red Cedar.....50¢  
Goodenough Cedar.....50¢  
Boss Metallic Key.....50¢  
Reliable Cork Lined.....80¢  
Western Pattern Cork Lined.....50¢  
Self-Measuring.....\$50.00, 20¢  
Lane's.....\$35.00, 25¢  
Victor, per doz \$38.00, 25¢

**Felice Plates—See Plates, Felice.****Fifth Wheels—**

Derby and Cincinnati.....45¢  
Brewster.....50¢

**Files—**

Domestic—  
Nicholson Files, Rasps, &c.....60¢  
Nicholson (X. F.) Files.....25¢  
Nicholson's Royal Files (Seconds).....75¢  
(extra prices on certain sizes)  
G. & H. Barnett (Black Diamond).....60¢  
Eagle.....60¢  
Other makers, best brands.....60¢  
Fair brands.....60¢  
Second quality.....60¢  
Sellers Horse Rasps.....60¢  
McClaffrey's Horse Rasps.....60¢  
Chelsea Horse Rasps, Hand Cut.....60¢  
Moss & Gamble.....List, April 1, 1883, 15¢  
Butcher.....Butcher's list, 20¢  
Stubbs.....Stubbs list, 25¢  
Turton's.....Turton's list, 20¢  
Greaves' Horse Rasps, American list, 60¢

**Fixtures.**

Grindstone—  
Sargent's Patent.....70¢  
Reading Hardware Co.....60¢  
P. S. & W. Co.....60¢  
Fluting Machines—See Machines, Fluting.  
Fluting Scissors—See Scissors, Fluting.  
Fodder Squeezers—See Squeezers, Fodder.  
Forks—  
Hay, Manure, &c., Also List, 65¢  
Hay, Manure, &c., Phila. List, 60¢  
Plated, see Spoons.  
Frames—  
Saw—  
White Vermont.....\$90.00, 10.00  
Red, Polished and Varnished.....\$1.50, 25¢  
Screen, Window and Door—  
Porter's Pat. Window and Door Frame.....33¢  
Warner's Screen Corner Irons.....33¢  
Stearns' Frames and Corners.....25¢  
Cortland.....40¢  
Freezers, Ice Cream—  
White Mountain.....60¢  
Granite State.....65¢  
Artic.....70¢  
American.....60¢  
Buffalo Champion.....65¢  
Rhoads' Lightbulb.....65¢  
Gem.....65¢  
Blizzard.....70¢  
Double Action Crown.....60¢  
Crown.....60¢  
Peelers.....60¢  
Zero.....60¢  
Boss and Pet.....60¢  
Keystone, P. D. & Co., each, \$1.50, 20¢  
Fruit and Jelly Presses—See  
Presses, Fruit and Jelly.  
Fry Pans—See Pans, Fry.  
Funnels.  
Gerardoff's Perfection, Standard and  
Globe, Tin, 1 gr. 10; 2 to 5 gr.,  
20; 5 to 10 gr., 30;  
Copper, 1 to 6 doz, 15; 6 to 12  
doz, 20; over 12 doz.....25¢  
Furnaces, Soldering.  
Burgess No. 3 Gem, tin reservoir.....\$7.00  
Burgess No. 3 Gem, copper reservoir, 5.50

**Fuse—**

Common Hemp Fuse, for dry ground.....\$2.70  
Common Cotton Fuse, for dry ground 2.85  
Single Taped Fuse, for wet ground... 3.85  
Double Taped Fuse, for wet ground... 4.85  
Triple Taped Fuse, for very wet gr... 5.80  
Small Gutta Percha Fuse, for water. 7.50  
Large Gutta Percha Fuse, for water. 14.00

**Gates, Molasses—**

Stebbin's Pattern.....75¢  
Stebbin's Genuine.....60¢  
Stebbin's Pinned Ends.....40¢  
Bass's Hard Metal.....50¢  
Bush's.....30¢  
Lincoln's Pattern.....70¢  
Weed's.....20¢  
Boss, per doz:  
No. 1, 7; No. 2, 8; No. 3, 9; No. 4,  
10.....60¢

**Gauges.**

Marking, Mortise, &c.....60¢  
Starr's Surface, Center and Scratch.....25¢  
Wire, low list.....10¢  
Wire, Wheeler, Madden & Co.....10¢  
Wire, Morse's.....10¢  
Wire, Brown & Sharpe's.....10¢  
Wire, P. S. & W. Co.....10¢

**Gimlets—**

Nail and Spike.....50¢  
"Eureka" Gimlets.....40¢  
"Diamond" Gimlets.....40¢  
Double Cut, Sheppardson's.....60¢  
Double Cut, Ives.....40¢  
Double Cut, Douglas.....40¢  
"See," per gr \$12.....25¢

**Glue—**

Le Page's Liquid.....25¢  
Upton's Liquid.....25¢  
Improved Process.....25¢

**Glue Pots—See Pots, Glue.****Grease, Axle.**

Fraser's.....Keg \$4.40, Pail \$2.50  
Fraser's, in boxes.....\$2.50  
Dixon's Everlasting, in box.....\$2.50  
Dixon's Everlasting.....\$1.50, 25¢  
Lower grades, special brands.....\$2.50, 25¢

**Grindstones—**

Small, at factory.....\$7.50, 20¢  
Family, Cleveland Stone Co.....20¢  
Grindstone Fixtures—See Fixtures, Grindstone.

**Hack Saws—See Saws.****Halls, Awl.**

Sewing, Brass Per. gr. \$3.50.....45¢  
Pat. Sewing, Short, \$1.00 per doz.....40¢  
Pat. Sewing, Long.....\$1.00, 25¢  
Pat. Peg, Plain Top, gr. \$10.00, 40¢  
Pat. Peg, Leather Top, gr. \$10.00, 40¢

**Halters.**

Cover's, Rope, Jute.....60¢  
Cover's, Rope, 7-16 in. Jute.....70¢  
Cover's, Rope, 1/2 in. Hemp.....60¢  
Cover's, Adj. Rope Halters.....40¢  
Cover's, Hemp Horse and Cattle Tie.....50¢  
Cover's, Jute Horse Tie.....70¢  
Cover's, Jute Cattle Tie.....70¢  
Cover's, Adj. Web Halters.....35¢

**Hammers—**

Handled Hammers—  
Maydole's, list Dec. 1, '85.....25¢  
Buffalo Hammer Co.....50¢  
Hummason & Beckley.....50¢  
Atha Tool Co.....50¢  
C. Hammond & Son.....50¢  
Verree.....50¢  
Fayette R. Plumb.  
"Artisan's Choice," A. E. Hall 40¢  
Regul' r Y. & P. A. E. Hall.....50¢  
Horsehoe Turning Hammer.....50¢  
Other Hammers.....50¢  
Bartford, Nail Hammers.....50¢  
Bartford, Machinists, &c.....50¢  
Magnetic Tack, Nos. 1, 2, 3, \$1.25, 1.50 &  
1.75.....80¢  
Nelson Tool Works.....30¢  
Warner & Noting.....40¢  
Rock, Store & Wicks.....35¢  
Sargent's.....35¢

**Heavy Hammers and Sledges—**

8 lb and under.....\$4.00  
8 to 15 lb.....\$5.00  
Over 15 lb.....\$6.00  
Wilkinson's Smiths.....10¢

**Handcuffs and Leg Irons—See**

Police Goods.

**Handles—**

Cross-Cut Saw Handles—  
Athens' No. 1 Loop, pair, 25¢; No.  
12¢; No. 6, 10¢; No. 2 and No.  
Reversible, 15¢.  
Boynton's Loop Saw Handles, 50¢.....60¢  
Champion.....15¢

**Iron, Wrought or Cast—**

Door or Thumb.  
Nos. 0, 1, 2, 3  
Per doz.....\$0.90 100 1.15 1.30 1.50  
60¢  
Loggin's Latches.....\$2.00, 25¢  
Bronze Iron Drop Latches.....\$2.00, 25¢  
ap'd Store Door Handles—Nuts, \$1.50;  
Plate, \$1.10; No Plate, \$0.85.....70¢  
Jarn Door, per doz \$1.40.....10¢  
Rest and Lifting.....70¢

**Wood—**

Saw and Plane.....40¢  
Hammer, Hatchet, Axe, Sledge, &c.....40¢  
Brad Axl.....\$2.00  
Hickory Firmer Chisel, ass'd.....\$2.00  
Hickory Firmer Chisel, large.....\$2.00  
Apple Firmer Chisel, ass'd.....\$2.00  
Apple Firmer Chisel, large.....\$2.00  
Socket Firmer Chisel, ass'd.....\$2.00  
Socket Framing Chisel, ass'd.....\$2.00  
S. S. Smith & Co.'s Pat File.....50¢  
File, assorted.....\$2.00  
Auger, assorted.....\$2.00  
Pat. Auger, Ives.....\$2.00  
Pat. Auger, Douglas.....\$2.00  
Pat. Auger, Swan's.....\$2.00  
Hoe, Rake, Shovel, &c.....50¢

**Hangers—**

Barn Door, old pattern.....	60¢10¢10¢70¢
Barn Door, New England.....	60¢10¢10¢70¢
Samson Steel Anti-Friction.....	55¢
Orleans Steel.....	55¢
Hamilton Wrought Wood Track.....	55¢
U. S. Wood Track.....	55¢
Champion.....	60¢10¢
Rider and Wooster, Medina Mfg. Co.'s list.....	70¢
Climax Anti-Friction.....	55¢
Climax Anti-Friction for Wood Track.....	55¢
Zenith for Wood Track.....	55¢
Reed's Steel Arm.....	50¢
Challenge, Barn Door.....	50¢
Sterling.....	50¢10¢10¢
Victor, No. 1, \$15.00; No. 2, \$16.50; No. 3, \$18.00.....	50¢25¢
Cheritree.....	50¢10¢
Kidder.....	50¢10¢60¢
The Boss.....	60¢10¢
Best Anti-Friction.....	60¢10¢
Duplex (Wood Track).....	60¢10¢55¢
Terry's Pat., 7 dos pr. 4 in. \$10.00; 5 in. \$12.00.....	50¢10¢
Terry's Steel Anti-Friction Leader.....	50¢10¢
Terry's Steel Anti-Friction Ideal.....	50¢10¢
Cronk's Patent, Steel Covered.....	50¢55¢
Wood Track Iron Glad, 7 ft. 10 in.....	50¢
Carrier Steel Anti-Friction.....	50¢10¢
Architect, 7 set \$6.00.....	20¢
Elipse.....	20¢10¢
Felix, 7 set \$4.50.....	20¢
Richards.....	30¢30¢10¢
Lane's Standard.....	50¢55¢50¢10¢
Lane's New Standard.....	50¢50¢55¢
Ball Bearing Door Hanger.....	50¢10¢55¢10¢
Warner's Pat.....	20¢10¢20¢10¢10¢
Stearns' Anti-Friction.....	20¢10¢20¢10¢10¢
Stearns' Challenge.....	25¢10¢25¢10¢10¢
Faultless.....	40¢40¢25¢
American, 7 set \$6.00.....	40¢
Rider & Wooster, No. 1, 62¢; No. 2, 75¢.....	75¢
Paragon, Nos. 1, 2 and 3.....	40¢10¢
Cincinnati.....	25¢10¢
Paragon, Nos. 5, 5½, 7 and 8.....	20¢10¢
Crecent.....	60¢60¢10¢
Nickel Cast Iron.....	60¢
Nickel Malleable Iron and Steel.....	60¢
Scranton Anti-Friction Single Strap.....	55¢
Wild Wheel, 4 in. Wheel, \$15.00; 5 in. Wheel, \$21.00.....	45¢
Star.....	40¢10¢40¢10¢55¢
May.....	50¢55¢50¢10¢
Barry, \$6.00.....	40¢10¢
Interstate.....	50¢
Magic.....	45¢

**Harness Snaps—See Snaps.****Hatchets—**

American Axe and Tool Co.	
Blood's.....	40 & 10
Hunt's.....	50¢25¢
Hurd's.....	
Mann's.....	
Peck's.....	
Underhill's.....	
Buffalo Hammer Co.....	
Fayette R. Plumb.....	
C. Hammond & Son.....	
Kelly's.....	
Sargent & Co.....	
P. S. & W. Co.....	
Ten Eyck Edge Tool Co.....	
Collins.....	10¢
Schulte, Lohoff & Co.....	50¢50¢25¢

**Hay and Straw Knives—See****Knives.****Hinges—****Blind Hinges—**

Parker.....	75¢25¢
Palmer.....	50¢55¢10¢
Beymour.....	70¢25¢
Huffer.....	50¢
Clark's, Nos. 1, 3, 5, 40 and 50.....	75¢10¢55¢50¢
Clark's Morse Gravity.....	50¢
Sargent's Nos. 1, 3, 5, 11, 13.....	75¢10¢55¢10¢55¢
Sargent's, No. 13.....	77¢10¢10¢
Reading's Gravity.....	75¢10¢55¢10¢55¢
Shepard's.....	
Noiseless.....	75¢10¢
Niagara.....	80¢
Buffalo.....	80¢
Clark's Genuine Pattern.....	80¢
O. S., Lull & Porter.....	75¢10¢
Acme, Lull & Porter.....	75¢
Queen City Reversible.....	70¢10¢55¢75¢
Clark's Lull & Porter, Nos. 0, 1, 1½, 2, 2½, 3.....	75¢10¢55¢
North's Automatic Blind Hinges, No. 2, for Wood, \$9.00; No. 3, for Brick, \$11.50.....	10¢

**Gate Hinges—**

Western.....	7 dos \$4.40, 60¢
N. E.....	7 dos \$7.00, 55¢
N. E. Reversible.....	7 dos \$6.20, 55¢10¢
Clark's, Nos. 1, 2, 3.....	60¢10¢55¢
Y. State.....	7 dos \$5.00, 55¢10¢
Automatic.....	7 dos \$12.50, 50¢
Common Sense.....	7 dos pair \$4.50, 50¢
Seymour's.....	45¢10¢
Shepard's.....	60¢10¢55¢
Reed's Latch and Hinges.....	7 dos \$12.00, 50¢
Spring Hinges—	
Geer's Spring and Blank Butts.....	40¢
Union Spring Hinge Co.'s list, March 1891.....	30¢
Acme.....	25¢10¢
O. S.....	25¢10¢
Empire and Crown.....	20¢
Hero and Monarch.....	55¢
American, Gem, and Star.....	30¢
Oxford.....	20¢
Barker's Double Acting.....	20¢
Union Mfg. Co.....	25¢
Bommer's.....	30¢
Buckman's.....	15¢20¢
Chicago.....	30¢
Wiles.....	30¢
Devore's.....	40¢
Rex.....	40¢
Royal.....	50¢
Reliable.....	60¢
Champion.....	60¢
Bardeley's Patent.....	40¢
Stearns.....	50¢10¢
Niagara, Holdback pattern, per gross.....	\$14.00

**Wrought Iron Hinges**

List February 14, 1891.....	50¢10¢
Strap and T.....	50¢10¢

Corrugated Strap and T.....	50 & 10 & 5
Screw Hook and Strap.....	14 to 20 in., 75¢; 22 to 36 in., 80¢
Screw Hook and Eye.....	14 in., 75¢; 16 in., 80¢; 18 in., 85¢; 20 in., 90¢
Roller Blind Hinges, Nos. 32 and 34.....	50¢10¢
Roller Blind Hinges, Nos. 232 and 234.....	55¢10¢
Roller Plate.....	70¢10¢
Roller Raised.....	70¢10¢
Plate Hinges, 8, 10 & 12 in., 2.....	50¢
"Providence" over 12 in., 2.....	50¢

**Hoes—**

D. & H. Scovill.....	20¢
Lane's Crescent Planters Pattern.....	45¢25¢
Lane's Razor Blade, Scovill Pattern.....	30¢
Maynard, S. & O. Pat.....	45¢25¢
Sandusky Tool Co., S. & O. Pat.....	50¢10¢25¢
Am. Axe and Tool Co., S. & O.....	60¢
Chattanooga Tool Co., S. & O. Pat.....	60¢10¢
Grub.....	60¢10¢

**Handled—**

Garden, Mortar, &c.....	65¢55¢65¢10¢
Planter's Cotton &c.....	65¢55¢65¢10¢
Warren Hoe.....	60¢
Magic.....	7 dos \$4.00

**Hog Rings and Ringers—See****Kings and Ringers.****Holisting Apparatus—See Ma-****chines, Holisting.****Hollow-Ware—See Ware, Hollow.****Holders.**

Bag.....	
Sprengle's Pat.....	7 dos \$18.....60¢
Bit.....	
Extension.....	
Barber's, 7 dos \$15.00.....	40¢40¢10¢
Ives, 7 dos \$20.00.....	60¢55¢60¢10¢
Diagonal.....	7 dos \$24.00, 40¢
Angular.....	7 dos \$24.00, 40¢55¢

**File and Tool—**

Bals Pat.....	7 dos \$4.00; 25¢
Nicholson File Holders.....	20¢
Dick's Tool Holder.....	20¢

**Hooks—**

Cast Iron—	
Bird Cage, Sargent's list.....	60¢10¢10¢
Bird Cage, Reading.....	60¢10¢10¢
Clothes Line, Sargent's list.....	60¢10¢10¢10¢
Clothes Line, Reading.....	60¢10¢10¢10¢
Ceiling Sargent's list.....	55¢10¢10¢
Harness, Reading list.....	55¢10¢10¢
Coat and Hat, Sargent's list.....	55¢10¢60¢10¢
Coat and Hat, Reading.....	50¢10¢50¢10¢10¢

**Wrought Iron—**

Cotton.....	7 dos \$1.25
Cotton Pat. (N. Y. Mail & Handle Wks.).....	30¢
Tassel and Picture (T. & S. Mfg. Co.).....	50¢
Wrought Staples, Hooks, &c.....	See Wrought Goods.

**Wire—**

Wire Coat and Hat, Gem, list April, 1888.....	60¢
Wire Coat and Hat, Miles', list April, 1888.....	50¢
Indestructible Coat and Hat.....	45¢
Wire Coat and Hat, Standard.....	60¢
Handy Hat and Coat.....	50¢10¢
Steady Ceiling Hooks.....	50¢10¢
Belt.....	80¢30¢10¢
Atlas, Coat and Hat.....	80¢30¢10¢
Bright Wire Goods, see Wire.....	60¢

**Miscellaneous.**

Grass, No. 2, \$2.00; No. 3, \$2.25; No. 4, \$2.50.....	30¢
Noll's Grass.....	30¢
Bush.....	65¢60¢
Whitcomb—Patent.....	55¢
Hooks and Eyes—Malleable Iron.....	70¢70¢10¢
Fish Hooks, American.....	60¢10¢10¢
Bench Hooks.....	See Bench Stops.

**Horse Nails—See Nails, Horse.****Horse Shoes—See Shoes, Horse.****Hose, Rubber—**

Competition.....	75¢75¢55¢
Standard.....	60¢10¢55¢60¢10¢10¢
Extra.....	60¢10¢60¢
N. Y. B. & P. Co., Para.....	25¢55¢
N. Y. B. & P. Co., Extra.....	40¢40¢55¢
N. Y. B. & P. Co., Dundee.....	40¢10¢ @ 60¢

**Huskers—**

Blair's Adjustable.....	7 gr \$8.00
Blair's Adjustable Clipper.....	7 gr 7.00
Hubbard's Solid Steel.....	7 gr 4.50

**Indurated Fiber-Ware—See****Ware, Indurated Fiber.—****Irons.**

From 4 to 10, at factory.....	7 100 lb.
Self-Heating.....	\$2.30¢\$2.40
Self-Heating, Tailors.....	7 dos \$9.00 net
Mrs. Pott's Irons.....	50¢55¢@90¢
Enterprise Star Irons.....	50¢@90¢
XX Cold Handle Sad Iron.....	50¢55¢@90¢
Ideal Irons new list.....	50¢10¢50¢ @ 10¢10¢
Salamander, Irons.....	25¢
B. B. Sad Irons, 7.....	3 @ 34¢
Combined Fluter and Sad Iron, 7.....	\$15.00
Fox Reversible, Self-Fluter.....	7 dos \$24.00
Chinese Laundry (N. E. Butt Co.).....	8½¢, 15¢
New England.....	5¢, 15¢
Mahony's Troy Pol. Irons.....	25¢
Sensible, list Jan. 91.....	50¢10¢55¢
Sensible Tailor's Irons.....	30¢
National Self-Heating.....	30¢

**Soldering—**

Soldering Coppers.....	7 25¢ @ 23¢
Cover's Adjustable, list Jan. 1 1886.....	35¢23¢

**Irons, Pinking, per dos., 65¢.****Jack Screws—See Screws.****Jacks, Wagon.**

Daisy.....	40¢
Victor.....	40¢

**Kettles—**

Brass, Spun, Plain, list Jan. 1, '91.....	25¢55¢
Brass, Spun, Plain, W. M. list Jan. 1, '91.....	20¢
Enameled and Tea—See Hollow Ware.....	

**Keys—**

Lock Ass'n list Dec. 30, 1886.....	50¢10¢
Eagle, Cabinet, &c.....	35¢25¢
Hotchkiss' Brass Blanks.....	40¢
Hotchkiss, Copper and Tinned.....	40¢
Hotchkiss' Pad. and Cab.....	35¢
Ratchet Bed Keys.....	7 dos \$4.00, 15¢
Wollensack Tinned.....	50¢10¢

**Knife Sharpeners—See Sharpen-****ers, Knife.****Knives.****Butcher, Shoe, &c—**

Wilson's Butcher Knives, list Dec. 8, 1890.....	25¢
Ames' Butcher Knives.....	25¢
Poster Bros' Butcher, &c.....	40¢
Jordan's AAAI, Butchers', list.....	40¢
Nichols' Butcher Knives.....	40¢10¢
W. Wilson, Butcher, 6 in., \$2.00; 7 in., \$2.70; 8 in., \$3.30, &c.....	\$2.00
Ames' Shoe Knives.....	20¢25¢
Ames' Bread Knives, 7 dos \$1.50, 15¢20¢	
Moran's Shoe and Bread.....	20¢
Hay and Straw.....	See Hay Knives.
Table and Pocket.....	See Cutlery.
Corn, Auburn Mfg. Co. Western Pat.....	\$3.50

**Drawings—**

Witherby.....	75¢ @ 75¢10¢
Mix.....	75¢ @ 75¢10¢
New Haven.....	60¢10¢@60¢10¢55¢
Merrill.....	75¢@75¢55¢
Douglas.....	15¢10¢25¢
Watrous.....	20¢25¢
L. & J. White.....	20¢25¢
Bradley's.....	35¢
Adjustable Handle.....	25¢35¢
Wilkinson's Folding.....	25¢25¢55¢

**Hay and Straw—**

Lighting, from jobbers.....	\$8.00 @ \$9.00
Wadsworth's.....	40¢7½¢40¢10¢
Carter's Needle.....	7 dos \$11.00 @ \$11.50
Heath's.....	7 dos \$15.00 @ \$15.50
Auburn Hay, Com. and Spear Point.....	50¢
Noll's Hay.....	7 dos \$7.00 @ \$8.00

**Mining.**

Am. (2d quality), 7 gr., 1 blade, 77; 3 blades, \$12; 3 blades, \$18.....	net
Lothrop's.....	20¢10¢
Smith's, 7 dos, Single, \$2.00; Double, \$3.....	40¢

**Knaps & Cowles.....**

Knaps & Cowles.....	50¢10¢60¢
Buffalo Adjustable.....	7 dos \$3.00, 25¢
Buffalo Double Adj'table.....	7 dos \$3.00, 25¢

**Knobs—**

Door Mineral.....	60¢65¢
Door Por. Jap'd.....	70¢75¢
Door Por. Nickel.....	\$2.00¢2.25
Door Por. Painted, Nickel.....	\$2.00¢2.25
Drawer, Porcelain.....	60¢10¢50¢10¢10¢
Hemacite Door Knobs.....	40¢10¢50¢
Yale & Towne Wood, list Dec., 1886.....	40¢
Furniture Plain.....	75¢ gro 1 inch, 10¢
Furniture, Wood Screws.....	25¢10¢
Base, Rubber Tip.....	70¢10¢55¢
Picture, Jap'd.....	80¢10¢10¢70¢
Picture, Sargent's.....	70¢10¢
Picture, Hemacite.....	35¢55¢
Shutter, Porcelain.....	65¢10¢
Carriage, Jap.....	7 gro 50¢, 60¢10¢
Bardeley's Wood Door, Shutter, &c.....	40¢

**Ladies—**

Melting, Sargent's.....	55¢10¢
Melting, Reading.....	35¢10¢
Melting, Monroe's Pat.....	7 dos \$4.00, 40¢
Melting, P. S. & W.....	35¢10¢40¢
Melting, Warner's.....	30¢

**Lanterns—**

Plain with Guards, 7 dos.....	\$3.75¢4.00
Lift Wire, with Guards.....	\$4.00¢4.25
Square Plain, with Guards.....	\$3.75¢4.00
Sq. Lift Wire, with Guards.....	\$4.50

**Police Lanterns (including packages).**

24-inch Bull's-eye Police regular.....	7 dos \$3.00
3-inch Bull's-eye Police regular.....	7 dos \$3.00
24-inch Bull's-eye Police flash light.....	7 dos \$4.00
3-inch Bull's-eye Police flash light.....	7 dos \$4.50

**Lawn Mowers—See Mowers, Lawn.****Leaders, Cattle.**

Humason, Beckley & Co.'s.....	70¢
Sargent's.....	60¢10¢
Hotchkiss.....	30¢
Peck, Stow & W. Co.....	60¢10¢

**Lemon Squeezers—See Squeezers,****Lemon.****Lifters, Transom.**

Wollensack's:	
Class 3 and 4, Bronzed Iron.....	50¢
Class 3 and 4, Bronze Metal.....	35¢
Class 3 and 4, Brass.....	35¢
Skylight Lifters.....	35¢
Crown, Eagle and Shield.....	50¢
Reifer's, list Feb. 20, 1891.....	40¢55¢
Bronze Iron Rods.....	50¢10¢10¢25¢
Brass, Real Bronze or Nickel Plate.....	50¢
Excelsior.....	50¢10¢
Shaw's.....	50¢10¢
Payson's:	
Universal.....	60¢
Solid Grip.....	60¢
Imperial.....	50¢10¢

**Lines—**



**Nails.**  
Hickory..... 20x10x20x10x10x  
Lignum vitae..... 20x10x20x10x10x  
R. & L. Block Co., Hickory & L. V.  
20x10x20x10x

**Mattecks.** Regular list.  
60x10x60x10x5x

**Measures.**  
Standard Fiberglass, No. 1, peck, 7  
dosen, 44: 1/2 peck, \$3.50.

**Meat Cutters.** See Cutters, Meat.

**Menders, Harness.**  
Per doz..... \$2.00

**Mills.**  
Coffee.....

Box and Side, List Jan. 1, 1889..... 60x2x  
American, Enterprise Mfg Co. 20x10x30x  
The Swift, Lane Bros..... 20x10x

**Mining Knives.** See Knives, Mining.

**Molasses Gates.** See Gates, Molasses.

**Money Drawers.** See Drawers, Money.

**Mowers, Lawn.**

Pennsylvania New Model, Excelsior,  
Continental, &c..... 60x60x5x  
Philadelphia..... 60x10x  
Perfection..... 60x10x10x  
Easy..... 60x10x60x10x5x  
Other Machines..... 60x10x5x70x

**Muzzles.**  
Safety..... 7 doz, \$3.00, 25x

**Nails.**  
Cut and Wire. See Trade Report.

Wire Nails, Papered.

Association list, July 15, '89, 75x10x90x  
Tack Mfrs' list..... 70x10x10x

Wire Nails, Standard Penny.

Card June 1, '89, base..... \$2.20 @ \$2.30

**Hoise.**

No. 6 7 8 9 10

Ausable..... 28x26x25x24x23x

Clinton, Vin. 19x17x16x15x14x..... 30x

Essex..... 28x26x25x24x23x

Lyra..... 19x17x16x15x14x..... 30x

Snowden..... 19x17x16x15x14x..... 30x

Pulnam..... 28x26x25x24x23x

Vulcan..... 28x26x25x24x23x

Northwest..... 28x26x25x24x23x

Globe..... 28x26x25x24x23x

Boston..... 28x26x25x24x23x

A. C..... 28x26x25x24x23x

C. B. K..... 28x26x25x24x23x

Maud S..... 28x26x25x24x23x

Champlain..... 28x26x25x24x23x

Saranac..... 28x26x25x24x23x

Champion..... 28x26x25x24x23x

Capewell..... 28x26x25x24x23x

Star..... 28x26x25x24x23x

Anchor..... 28x26x25x24x23x

Western..... 28x26x25x24x23x

Empire Bronzed..... 14x10x

**Picture.**

Brass Head, Sargent's list..... 50x10x10x

Brass Head, Combination list..... 50x10x

Porcelain Head, Sargent's list..... 50x10x10x

Porcelain Head, Combination list..... 40x10x

Niles' Patent..... 40x

**Nail Pullers.** See Pullers, Nail.

**Nail Sets.** See Sets, Nail.

**Nut Crackers.** See Crackers, Nut.

**Nuts.** List Dec. 18, 1889.

Square, Hex.

Hot Pressed..... 5.40 6.00 off list.

Cold Punched..... 5.00 5.10 off list.

In packages of 100 lb, add 1-10¢ per lb.

net; in packages less than 100 lb, add

1/2¢ per lb, net.

**Oakum.**

Best or Government..... 7¢ 7 1/2¢

U. S. Navy..... 5¢ 5 1/2¢

**Oilers.**

Zinc and Tin..... 65x10x70x

Brass and Copper..... 60x10x50x10x5x

Malleable, Hammer's Improved, No. 1,

\$5.60; No. 2, \$4.00; No. 3, \$4.40 7 doz

10x10x5x

Malleable, Hammers, Old Pattern, same

list..... 40x

Prior's Pat. or "Paragon" Zinc..... 60x10x10x

Prior's Pat. or "Paragon" Brass..... 60x

Olmstead's Tin and Zinc..... 60x

Olmstead's Brass and Copper..... 60x

Broughton's Zinc..... 60x

Broughton's Brass..... 60x

Gem P. D. & Co..... 7 doz, \$2

Steel, Draper and Williams..... 60x

**Openers, Can.**

Messenger's Comet..... 7 doz \$3.00, 25x

American..... 7 doz \$3.00, 25x

Duplex..... 7 doz \$3.00, 25x

Lyman's..... 7 doz \$3.00, 25x

No. 4 French..... 7 doz \$3.00, 25x

No. 5, Iron Handle..... 7 doz \$3.00, 25x

Eureka..... 7 doz \$3.00, 25x

Sardine Scissors..... 7 doz \$3.00, 25x

Star..... 7 doz \$3.00, 25x

Sprague, No. 1, \$2.00 2, \$2.25 3, \$2.50

Excelsior No. 1 \$2.50; No. 2, \$1.50

World's Best, 7 gross, No. 1, \$12.00

No. 2, \$24.00; No. 3, \$36.00..... 60x10x

Universal, 7 doz \$3.00..... 60x5x

Domestic, 7 doz \$2.50..... 45x

Champion 7 doz \$2.00..... 54x

**Packing, Steam.**

Standard..... 60x5x65x

Extra..... 60x50x55x

N. Y. B. & P. Co., Standard..... 60x

N. Y. B. & P. Co., Empire..... 60x

N. Y. B. & P. Co., Salmander..... 25x

Jenkins' Standard, 7 doz, 80¢, 35¢ 25¢ 5¢

**Miscellaneous.**

American Packing..... 10x11x 7¢

Russia Packing..... 14x 7¢

Italian Packing..... 13x14x 7¢

Cotton Packing..... 15x17x 7¢

Jute..... 16x18x 7¢

**Padlocks.** See Locks.

**Pails.**

Galvanized Iron—

Quarts 10 12 14

Hill's Light Weight, 7 doz, \$2.75 3.00 3.25

Hill's Heavy Weight, 7 doz, 3.00 3.25 3.75

Helwig's..... 2.50 2.75 3.00

Sidney Shepard & Co..... 2.50 2.85 3.00

Fire Buckets..... 2.50 2.75 3.00

Buckets, see Well Buckets.

Indurated Fibre Ware—25¢

Star Pails, 12 qt..... 7 doz \$5.40

Fire, Stable and Milk, 14 qt..... 7 doz \$7.80

Standard Fibre Ware—

Plain, Dec'd

Water Pails, 12 qt, per doz, \$4.00 \$4.50

Dairy Pails, 14 qt., per doz, 4.50 5.00

Fire Pails, No. 1, 12 qt, per doz, 4.50 5.00

Fire Pails, No. 2, 14 qt, per doz, 5.00 6.50

Sugar Pails..... 6.00 6.50

Horse Pails..... 6.00 6.50

Buggy Pails..... 4.00 9.00

Slop Jars (bal. trap)..... 6.50 7.50

Chamber Pails, 14 qt..... 6.50 7.50

**Pans.**

Dripping.

Small sizes..... 7 1/2 8 1/2 9 1/2

Large sizes..... 7 1/2 8 1/2 9 1/2

Silver & Co. (Covered)..... 40x

**Fry.**

Standard List:

No..... 0 1 2 3 4

7 doz, \$3.00 \$3.75 \$4.25 \$4.75 \$5.25

No..... 0 1 2 3 4

7 doz, \$6.00 \$7.00 \$8.00 \$9.00

Polished, regular goods..... 75¢ 75¢ 10¢

Acme Fry Pans..... 60x10x

**Dust.**

Steel Edge, No. 1..... 7 doz \$1.75

**Paper and Cloth.**

Sand and Emery—

List April 19, 1886..... 50x60x10x

Sibley's Emery and Crocus Cloth..... 30x

**Parers.**

Apple.

Advance..... 7 doz \$4.75

Baldwin..... 7 doz 5.25

Bonanza..... each 6.00

Daisy..... each 4.00

Dandy..... each 7.50

Eureka..... each 4.25

Family Bay State..... each 10.00

Favorite..... 7 doz 12.00

Gold Medal..... 7 doz 4.00

Ideal..... 7 doz 4.00

Improved Bay State..... 7 doz \$7.00 \$8.00

Little Star..... 7 doz 4.50

Monarch..... 7 doz 12.50

New Lightning..... 7 doz 5.50

Orion..... 7 doz 4.00

Penn..... 7 doz 4.00

Perfection..... 7 doz 4.00

Pomona..... 7 doz 4.00

Rocking Table..... 7 doz 4.50

Victory..... 7 doz 12.50

Waverly..... 7 doz 4.00

White Mountain..... 7 doz 4.00

75..... 7 doz 4.25

75..... 7 doz 7.00

**Potato.**

White Mountain..... 7 doz \$4.50

American Combination..... 7 doz \$5.50

Hoodler..... 7 doz \$13.50

Saratoga..... 7 doz \$5.50

**Pencils.**

Faber's Carpenters..... high list 50x

Faber's Round Gilt..... 7 doz \$5.25

Dixon's Lead..... 7 doz \$4.50

Dixon's Lumber..... 7 doz \$6.75

Dixon's Carpenters..... 10x

**Picks.**

Railroad or Adse Eye, 5 to 6, \$12.00;

6 to 7, \$13.00..... 60x10x60x10x5x

**Picture Nails.** See Nails, Picture.

**Pinking Irons.** See Irons, Pinking.

**Pins.**

Box—

Humason, Beckley & Co's..... 60x10x

Sargent & Co's..... 17 an \$1..... 60x10x

Peck, Stow & W Co..... 50x10x50x10x5x

**Pipe, Wrought Iron.**

List September 18, 1889.

14 and under, Plain..... 65x

14 and under, Galvanized..... 45x

14 and over, Plain..... 65x

14 and over, Galvanized..... 52x

Boiler Tubes.

Sizes up to 2 1/2 in. inclusive..... 65x

Sizes 3 to 4 in. inclusive..... 65x

Sizes 7 in. and up..... 65x

Casing..... 65x

**Planes and Plane Irons.**

Wood Planes—

Molding..... 40x10x

Scotch, First Quality..... 60x10x

Bench, Second Quality..... 60x10x

Balliey's Stanley R. & L. Co..... 40x10x

Balliey's (Stanley R. & L. Co.)..... 40x10x

Miscellaneous Planes (Stanley R. & L. Co.)..... 30x10x20x10x10x

Victor Planes (Stanley R. & L. Co.)..... 30x10x20x10x10x

Steel's Iron Planes..... 30x30x10x

Meritt's Iron Co's..... 40x40x10x

Davis's Iron Planes..... 40x40x10x

Birmingham Plane Co..... 60x60x10x

Gage Tool Co.'s Self-Setting..... 30x40x10x

Chaplin's Iron Planes..... 40x40x10x

Sargent's..... 30x10x30x10x10x

Standard Tool Co..... 60x50x5x

**Plane Irons.**

Butcher's..... \$5.00 \$5.25 to 30x

Buck Bros..... 30x

Auburn "Thistle"..... 30x10x

Ohio..... 30x10x

Sandusky..... 30x10x

S. & I. J. White..... 25x

**Plates.**

Folice..... 7 1/2 8 1/2 9 1/2

**Pliers and Nippers.**

Button's Patent..... 50x50x10x

Hall's No. 2, 5 in., \$13.50; No. 4, 7 in.

<b>Black Saws—</b>	
Griffin's, complete, 40x10x50	40x10x50
Griffin's Black Saw, Blades, 40x10x50	40x10x50
Star Black Saws and Blades, 35x	35x
Eureka and Crescent, 35x	35x
<b>Scroll—</b>	
Lester, complete, \$10.00, 25x	25x
Rogers, complete, \$4.00, 25x	25x
Barnes' Builders' and Cabinet Makers', 25x	25x
Barnes' Scroll Saw Blades, 35x	35x
<b>Saw Frames—See Frames, Saw.</b>	
<b>Saw Sets—See Sets, Saw.</b>	
<b>Saw Tools—See Tools, Saw.</b>	
<b>Scales—</b>	
Hatch, Counter, No. 171, good quality, \$21.00	\$21.00
Hatch, Tea, No. 161, \$21.00	\$21.00
Union Platform, Plain, \$21.00	\$21.00
Union Platform, Striped, \$24.00	\$24.00
Chattillon's Grocers' Trip Scales, 50x	50x
Chattillon's Eureka, 25x	25x
Chattillon's Favorite, 40x	40x
Family, Turnbills, 90x30x10	90x30x10
Rieble Bros.' Platform, 40x	40x
<b>Scale Beams—See Beams, Scale.</b>	
<b>Scissors, Fluting—45x</b>	
<b>Scrapers—</b>	
Adjustable Box Scraper (S. R. & L. Co.), \$5.00	\$5.00
Box, 1 Hand, Beech, \$4.00, 10x	\$4.00, 10x
Box, 2 Hand, Beech, \$4.00, 10x	\$4.00, 10x
Defiance Box and Ship, 60x10x60x	60x10x60x
Foot, Common, \$3.50 net	\$3.50 net
Ship, R. I. Tool Co., 10x	10x
<b>Screen Window and Door Frames—See Frames.</b>	
<b>Screw Drivers—See Drivers, Screw.</b>	
<b>Screws.</b>	
<b>Bench and Hand—</b>	
Bench, Iron, 55x10x55x10x10x	55x10x55x10x10x
Bench, Wood, Beech, \$2.25	\$2.25
Bench, Wood, Hickory, 20x10x	20x10x
Hand, Wood, 25x10x25x10x5x	25x10x25x10x5x
Lag, Blunt Point, list Jan. 1, 1890, 75x10x	75x10x
Coach and Lag, Gimlet Point, list Jan. 1, 1890, 75x10x	75x10x
Bed, 25x5x	25x5x
Hand Rail, Sargent's, 60x10x	60x10x
Hand Rail, R. & J. Mfg. Co., 70x10x75x	70x10x75x
Hand Rail, Am. Screw Co., 75x	75x
Jack Screws, Millers Falls list, 60x60x5x	60x60x5x
Jack Screws, P. S. & W., 35x	35x
Jack Screws, Sargent, 60x10x60x10x5x	60x10x60x10x5x
Jack Screws, Stearns, 40x40x10x	40x40x10x
<b>Cork—</b>	
Humason & Beckley Mfg. Co., 40x10x50x	40x10x50x
Williamson's, 35x40x35x5x	35x40x35x5x
Howe Bros. & Hulbert, 35x	35x
<b>Machine—</b>	
Flat Head, Iron, 55x	55x
Round Head, Iron, 60x	60x
<b>Wood—</b>	
List January 1, 1891, 72x4x	72x4x
Flat Head Iron, 67x5x	67x5x
Round Head Iron, 72x5x	72x5x
Flat Head Brass, 72x5x	72x5x
Round Head Brass, 65x	65x
Flat Head Bronze, 72x5x	72x5x
Round Head Bronze, 65x	65x
Rogers' Drive Screws, 55x4x	55x4x
<b>Scroll Saws—See Saws, Scroll.</b>	
<b>Scythes.</b>	
Grain, 40x5x40x10x	40x5x40x10x
Grass, 40x10x50x	40x10x50x
<b>Scythe Snaths—See Snaths, Scythe.</b>	
<b>Set.</b>	
<b>Awl and Tool.</b>	
Aiken's Sets, Awls and Tools, No. 20, \$10.00, 55x10x	55x10x
Frax's Adj. Tool Hds., Nos. 1, 2, 3, 4, \$12.50, 55x10x	55x10x
Miller's Falls Adj. Tool Hds., No. 1, \$12.50, 55x10x	55x10x
Henry's Combination Haft, \$10.00, 55x10x	55x10x
Brad Sets, No. 42, \$10.50; No. 43, \$12.50, 70x10x5x	70x10x5x
Stanley's Excelsior, No. 1, \$7.50; No. 2, \$4.00; No. 3, \$5.50, 30x10x	30x10x
<b>Nail—</b>	
Square, \$7.00, \$4.00, \$4.25	\$7.00, \$4.00, \$4.25
Round, \$7.00, \$4.00, \$4.25	\$7.00, \$4.00, \$4.25
Buck Prod., \$7.00, \$4.00, \$4.25	\$7.00, \$4.00, \$4.25
Cannon's Diamond Point, \$7.00, \$4.00, \$4.25	\$7.00, \$4.00, \$4.25
<b>Rivet.</b>	
Regular list, 50x10x	50x10x
<b>Saw.</b>	
Stillman's Genuine, \$5.00, \$7.75, 40x5x	40x5x
Stillman's Imita, \$3.25, \$5.25, 40x5x	40x5x
Common Lever, \$2.00, \$2.50, 40x5x	40x5x
Morrill's No. 1, \$15.00; No. 2, \$24.00, 40x10x50x	40x10x50x
Leach's No. 0, \$9.99; No. 1, \$15.00, 15x20x	15x20x
Nash's, 80x10x90x10x10x	80x10x90x10x10x
Hammer, Hotchkiss, \$5.50, 10x	10x
Hammer, Bemis & Call Co.'s new Pat., 30x25x	30x25x
Bemis & Call Co.'s Lever and Spring Hammer, 30x25x	30x25x
Bemis & Call Co.'s Plate, 10x	10x
Bemis & Call Co.'s Cross Cut, 12x5x	12x5x
Aiken's Genuine, \$13.00, 60x10x	60x10x
Aiken's Imitation, \$7.00, 55x5x	55x5x
Hart's Pat. Lever, 20x	20x
Diamond's Star, 25x	25x
Leopold, \$2.00, 40x10x	40x10x
Atkin's Lever, \$2.00, No. 1, \$6.00	\$2.00, No. 1, \$6.00
Atkin's Criterion, \$2.00, No. 1, \$6.00	\$2.00, No. 1, \$6.00
Croissant (Keller), No. 1, \$15.00; No. 2, \$24.00, 40x10x	40x10x
Avery's Saw Set and Punch, 50x	50x
Chief's H. R. Co.'s Superior, \$15.00, 40x	40x
Crescent, \$3.00, 30x	30x
<b>Sharpeners, Knife.</b>	
Applewood Handles, \$2.00, 40x	\$2.00, 40x
Rosewood or Cocobolo, \$2.00, 40x	\$2.00, 40x

<b>Shaves, Spoke.</b>	
Iron, 45x	45x
Wood, 30x	30x
Bailey's (Stanley B. & L. Co.), 40x10x	40x10x
Stearns, 30x10x	30x10x
Cincinnati, 25x10x	25x10x
Goodell's, \$9.00, 25x	\$9.00, 25x
<b>Shears—</b>	
American (Cast) Iron, 75x10x75x10x5x	75x10x75x10x5x
Barnard's Lamp Trimmers, \$3.75	\$3.75
Tinners', list, Dec. 1891, 20x25x	20x25x
Seymour's, list, Dec. 1891, 60x10x10x60x10x10x5x	60x10x10x60x10x10x5x
Heinrich's, list, Dec. 1891, 60x10x10x60x10x10x5x	60x10x10x60x10x10x5x
Heinrich's Tailor's Shears, 35x4x	35x4x
Cast Steel Trimmers, 80x80x10x	80x80x10x
First quality, 80x10x80x10x10x	80x10x80x10x10x
Acme Cast Shears, 10x10x	10x10x
Diamond Cast Shears, 10x10x	10x10x
Clipper, 10x10x	10x10x
Victor Cast Shears, 75x10x75x10x5x	75x10x75x10x5x
Howe Bros. & Hulbert, Solid Forged Steel, 40x	40x
Chicago Drop Forge & F. Co., Solid Steel Forged, 60x60x10x	60x60x10x
Davenport Cutlery Co., 60x60x10x	60x60x10x
Clausen Shear Co., Japaned, 70x	70x
Clausen Shear Co., Nickel, same list, 60x	60x
Gaulnic, 3 1/2 to 9 in, \$1.00, \$1.00	\$1.00, \$1.00
<b>Pruning Shears and Hooks.</b>	
Diston's Combined Pruning Hook and Saw, \$15.00, 20x10x	\$15.00, 20x10x
Diston's Pruning Hook, \$12.00, 20x10x	\$12.00, 20x10x
E. S. Lee & Co.'s Pruning Tools, 40x	40x
Pruning Shears, Henry's Pat., \$5.00, 40x	\$5.00, 40x
Henry's Pruning Shears, \$4.25, 40x	\$4.25, 40x
Wheeler, M. & C. Co.'s Combination, \$12.00, 20x	\$12.00, 20x
Dunlap's Saw and Chisel, \$8.50, 30x	\$8.50, 30x
J. Mallinson & Co., No. 1, \$5.25; No. 2, 7.25	\$5.25; No. 2, 7.25
P. S. & W. Co., 80x	80x
<b>Tinners', \$2.00</b>	
Shears and Snips (P. S. & W.), 30x25x	30x25x
Snips, J. Mallinson & Co., 35x4x	35x4x
<b>Shelves.</b>	
<b>Sliding Door—</b>	
M. W. Co., list July, 1888, 50x10x60x5x	50x10x60x5x
R. & E., list Dec. 15, 1888, 55x20x	55x20x
Corbin's list, 60x10x25x	60x10x25x
Patent Roller, Hatfield's, 75x	75x
Russell's Anti-Friction, list Dec. 15, 1888, 60x25x	60x25x
Moore's Anti-Friction, 60x	60x
<b>Sliding Shutter—</b>	
R. & E. list Dec. 15, 1888, 60x10x25x	60x10x25x
Sargent's list, 60x10x	60x10x
Reading list, 60x10x10x	60x10x10x
<b>Shells—</b>	
1st quality 4, 8, 10 and 12 gauge, 25x10x25x	25x10x25x
1st quality, 14, 16 and 20 gauge (\$10 list), 20x10x25x	20x10x25x
Time, 40x25x	40x25x
Star, Club, Rival and Climax brands, 35x10x25x	35x10x25x
Setbold's Comb. Shot Shells, 1st quality, 60x25x	60x25x
Star Shot Shells, Club, Rival, Climax, 60x25x	60x25x
<b>Shells Loaded—</b>	
standard list, July 19, 1890, 40x10x10x	40x10x10x
<b>Ship Tools—</b>	
L. & I. J. White, 20x5x	20x5x
<b>Shoes, Horse, Mule, &amp;c.—</b>	
<b>Horse—</b>	
Burden's Perkins', Phoenix and Bryden's Boss at factory, \$4.00	\$4.00
Bryden's Frog Pressure, at factory, \$5.00	\$5.00
<b>Mule—</b>	
Add \$1 per keg to above prices.	
<b>Ox, Wrought—</b>	
Ton lots, \$9.00	\$9.00
1000 lb lots, \$9.00	\$9.00
500 lb lots, \$10.00	\$10.00
<b>Shot—</b>	
Drop, up to BB, 25-lb bag, \$1.47	\$1.47
Drop, u to BB, 5-lb bag, .35	.35
Drop BB and larger, 25-lb bag, 1.67	1.67
Drop BB and larger 5-lb bag, .40	.40
Buck and Chilled, 25-lb bag, 1.67	1.67
Buck and Chilled, 5-lb bag, .40	.40
Dust Shot, 25-lb bag, 2.00	2.00
Dust shot, 5-lb bag, .45	.45
<b>Shovels and Spades—</b>	
Amer's Shovels, Spades, &c., list Nov. 1, 1888, 30x	30x
Notes—Jobbers frequently give 5x7x4 extra on above.	
Griffith's Black Iron, 50x10x	50x10x
Griffith's C. S., 60x60x10x	60x60x10x
Griffith's Solid C. S. R. R. Goods, 20x	20x
St. Louis Shovel Co., 30x20x7x5x	30x20x7x5x
Hussey, Binns & Co., 15x25x5x	15x25x5x
Hubbard & Co., 30x20x7x5x	30x20x7x5x
Lehigh Mfg. Co., 50x10x	50x10x
H. M. Myers Co., 30x	30x
Payne Pettibone & Son, 35x4x5x	35x4x5x
Remington's (Lowman's) Pat., 30x10x40x	30x10x40x
Rowland's, Black Iron, 50x10x	50x10x
Rowland's Steel, 60x5x60x10x	60x5x60x10x
<b>Shovels and Tongs—</b>	
Iron Head, 60x10x60x10x5x	60x10x60x10x5x
Brass Head, 80x10x10x	80x10x10x
<b>Shoes.</b>	
Mann's Tin Rim, 50x25x	50x25x
Buffalo Metallic, S. B. & Co., 50x25x	50x25x
Shaker (Barrie's) F. Flour Sifters, \$2.00, \$2.00	\$2.00, \$2.00
Electric, \$2.00, \$2.00	\$2.00, \$2.00
A. & W. Sifters, \$2.00, \$2.00	\$2.00, \$2.00
Hunter's, \$2.00, \$2.00	\$2.00, \$2.00
Smith's Adjustable Milk Strainer, \$2.00, \$2.00	\$2.00, \$2.00
Smith's Adjustable T. & C. Strainer, \$2.00, \$2.00	\$2.00, \$2.00
<b>Shoes, Wooden Rim—</b>	
Mesh 15, Nested, \$1.00, \$1.00	\$1.00, \$1.00
Mesh 20, Nested, \$1.00, \$1.00	\$1.00, \$1.00
Mesh 24, Nested, \$1.15, \$1.15	\$1.15, \$1.15

<b>Skels. Thimble—</b>	
Western list, 75x5x75x10x	75x5x75x10x
Columbus Wrt. Steel, Special net price, 60x	60x
Coldbrookdale Iron Co., 60x	60x
Seneca Falls Pattern, 60x	60x
Utica P. S. T. Skels., 60x	60x
Utica Turned and Fitted, 35x	35x
<b>Slates—</b>	
School, by case, 50x10x50x10x10x	50x10x50x10x10x
<b>Snaps, Harness, &amp;c.—</b>	
Anchor (T. & S. Mfg. Co.), 65x	65x
Fiten's (Bristol), 60x10x	60x10x
Hotchkiss, 10x	10x
Andrews, 50x	50x
Sargent's Patent Guarded, 70x10x10x	70x10x10x
German, new list, 50x10x5x2x	50x10x5x2x
Covert, New Pat. 50x10x5x2x	50x10x5x2x
Covert, New R. E., 60x10x5x2x	60x10x5x2x
Covert Spring, 60x10x10x	60x10x10x
<b>Snaths, Scythe.</b>	
List, 60x4x	60x4x
<b>Soldering Irons—See Irons, Soldering.</b>	
<b>Splittoons, Cuspidors, &amp;c.</b>	
<b>Standard Fibreware—</b>	
Cuspidors, 8 1/2-Inch, \$ dos., No. 5, \$8; No. 6, \$9	\$ dos., No. 5, \$8; No. 6, \$9
Splittoons, Daisy, 8-Inch, No. 1, \$4; 10 and 11 inch, \$6	\$4; 10 and 11 inch, \$6
<b>Spoke Shaves—See Shaves, Spoke.</b>	
<b>Spoke Trimmers—See Trimmers, Spoke.</b>	
<b>Spoons and Forks—</b>	
<b>Tinned Iron—</b>	
Basting, Cen. Stamp. Co.'s list, 70x10x	70x10x
Solid Table and Tea, Cen. Stamp. Co.'s list, 70x10x	70x10x
Buffalo S. S. & Co., 33x4x2x	33x4x2x
<b>Silver-Plated—(4 mos. or 5x cash 30 days.)</b>	
Meriden Brit. Co., Rogers, 40x15x	40x15x
C. Rogers & Bros., 40x15x	40x15x
Rogers & Bro., 40x15x	40x15x
Reed & Barton, 40x40x5x	40x40x5x
Wm. Rogers Mfg. Co., 40, 15x5x	40, 15x5x
Simpson, Hall, Miller & Co., 40, 15x5x	40, 15x5x
Holmes & Edwards Silver Co., 40, 15x5x	40, 15x5x
L. Boardman & Son, 50x12x5x	50x12x5x
<b>Miscellaneous.</b>	
Holmes & Edwards Silver Co., 50x10x5x	50x10x5x
No. 30 Silver Metal, 50x10x5x	50x10x5x
No. 24 German Silver, 50x10x5x	50x10x5x
No. 50 Nickel Silver, 50x10x5x	50x10x5x
No. 49 Nickel Silver, 50x10x5x	50x10x5x
Wm. Rogers Mfg. Co., 50, 10x5x	50, 10x5x
Rogers' Silver Metal, 50, 10x5x	50, 10x5x
18x Rogers' German Silver, 50x5x	50x5x
25x Rogers' Nickel Silver, 50x5x	50x5x
German Silver, Hall & Elton, 50x5x cash	50x5x cash
Nickel Silver, 50x5x60x10x5x cash	50x5x60x10x5x cash
Britannia, 60x10x5x	60x10x5x
Boardman's N. & N. Silver, 60x10x5x	60x10x5x
Boardman's Britannia Spoons, cash lots, 60x5x cash	60x5x cash
<b>Springs—</b>	
<b>Door—</b>	
Torrey's Rod, regular size, \$ dos \$1.90	\$ dos \$1.90
Gray's, \$ gr., \$20.00, 20x	\$20.00, 20x
Bee Rod \$ gr., \$20.00, 20x	\$20.00, 20x
Warner's No. 1, \$ dos, \$2.50; No. 2, \$3.50, 40x10x50x	\$2.50; No. 2, \$3.50, 40x10x50x
Gem (Coll. list April 19, 1888, 30x	30x
Star (Coll. list April 19, 1888, 30x	30x
Victor (Coll. list April 19, 1888, 30x	30x
Champion (Coll. list April 19, 1888, 30x	30x
Philadelphia, 5 in, \$5.00; 8 in, \$7.75, \$	\$5.00; 8 in, \$7.75, \$
Cowell's, No. 1, \$ dos, \$18.00; No. 2, \$15.00, 50x	\$18.00; No. 2, \$15.00, 50x</



**Thimble Skins—See Skins.****Ties, Bale—Steel**

Standard Wire, list.....50&amp;10&amp;25

**Tinners' Shears, &c.—See Shears, Tinners', &c.****Tinware—**

Stamped, Japanned and Pieced, list Jan. 20 1887.....70&amp;10&amp;70&amp;10&amp;25

**Tire Benders, Upsetters, &c.—See Benders and Upsetters, Tire.****Tools.****Coopers'—**Bradley's.....90%  
Barton's.....20&25  
L. & J. White.....20&25  
Albertson Mfg. Co.....25%  
Beatty's.....90%  
Sandusky Tool Co.....30&30&25  
Shaves, Cincinnati Tool Co.....30%**Lumber.**Ring Peavies, "Blue Line".....dos 20.00  
Ring Peavies, Common.....dos 18.00  
Steel Socket Peavies.....dos 21.00  
Mail Iron Socket Peavies.....dos 19.00  
Cant Hooks, "Blue Line".....dos 16.00  
Cant Hooks, Common Finish.....dos 14.00  
Cant Hooks, Mail Socket Clasp, "Blue Line" Finish.....dos 14.50  
Cant Hooks, Clip Clasp, "Blue Line" Finish.....dos 14.00  
Cant Hooks, Clip Clasp, Common Finish.....dos 13.00  
Hand Spikes.....dos 5 ft., 15.00; 8 ft., 12.00  
Pike Poles, Pike & Hook, dos 12 ft., 11.50; 14 ft., 12.50; 16 ft., 13.50; 18 ft., 14.50; 20 ft., 15.50  
Pike Poles, Pike only, dos 12 ft., 10.00; 14 ft., 11.00; 16 ft., 12.00; 18 ft., 13.00; 20 ft., 14.00  
Pike Poles, not ironed, dos 12 ft., 9.00; 14 ft., 10.00; 16 ft., 11.00; 18 ft., 12.00; 20 ft., 13.00  
Setting Poles, dos 12 ft., 14.00; 14 ft., 15.00; 16 ft., 17.00  
Swamp Hooks.....dos 12.00**Saw.**Atkins' Perfection.....dos 12.00  
Atkins' Excelsior.....dos 10.00  
Atkins' Giant.....dos 14.00**Tobacco Cutters—See Cutters, Tobacco.****Transom Lifters—See Lifters, Transom.****Traps—****Game—**Newhouse.....40&10&25  
Onida Pattern.....70&10%  
Game, Blake's Patent.....40&10&25  
**Mouse and Rat—**  
Mouse Wood Choker, dos holes, 11&12%  
Mouse, Round Wire.....dos 11.50, 12%  
Mouse, Cage Wire.....dos 12.50, 15%  
Mouse, Catch-em-alive.....dos 12.50, 15%  
Mouse, Bonanza.....dos 20.00, 21.00  
Rat, Decoy.....gr 10.00, 10%  
Ideal.....gr 10.00  
Cyclone.....gr 5.25  
Hotchkiss Metallic Mouse, 5-hole traps, dos 100, in full cases, dos 12.50, 15%  
Hotchkiss Imp. Rat Killer.....gr 12.50  
Hotchkiss New Rat Killer.....gr 12.50  
Schuyler's Rat Killer.....gr 12.50**Trimmers—**

Butter and cheese.....25%

**Trimmers, Spoke.**Bonney's.....dos 10.00, 50%  
Stearns'.....dos 10.00, 50%  
Ives, No. 1, 11.00; No. 2, 12.00  
Douglas'.....dos 10.00, 20%  
Cincinnati.....25%**Trowels—**Lothrop's Brick and Plastering.....20&10&5&35%  
Reed's Brick and Plastering.....15%  
Diaton's Brick and Plastering.....25%  
Peace's Plastering.....25%  
Clement & Maynard's.....25%  
Rose's Brick.....15&20%  
Brade's Brick.....25%  
Worral's Brick and Plastering.....20%  
Garden.....70%**Trucks, Warehouse, &c.—**

B. &amp; L. Block Co.'s list, '82.....40%

**Tubes, Boiler—****See Pipe.****Twine—**Flax Twine— BC. B.  
No. 9, 10 and 11 B. Balls.....26 3/4  
No. 12, 13 and 14 B. Balls.....25 3/4  
No. 15, 16 and 17 B. Balls.....24 3/4  
No. 18, 19 and 20 B. Balls.....23 3/4  
No. 21, 22 and 23 B. Balls.....22 3/4  
No. 24, 25 and 26 B. Balls.....21 3/4  
No. 27, 28 and 29 B. Balls.....20 3/4  
No. 30, 31 and 32 B. Balls.....19 3/4  
No. 33, 34 and 35 B. Balls.....18 3/4  
Chalk Line, Cotton, 1/2 B. Balls.....25%  
Mason Line, Linen, 1/2 B. Balls.....55%  
2-Ply Hemp, 1/2 and 3/4 B. Balls (Spring Twine).....15%  
3-Ply Hemp, 1/2 B. Balls.....16&10%  
3-Ply Hemp, 3/4 B. Balls.....15&10%  
Cotton Wrapping, 5 Balls to 1.....15&10%  
2, 3, 4 and 5-Ply Jute, 1/2 B. Balls.....10%  
Wool.....6&10%  
Paper.....13&14%  
Cotton Mops, 6, 9, 12 and 15 to dos.....18%**Vices—**Solid Box.....50&10&50&10&25%  
**Parallel—**  
Fisher & Norris Double Screw.....15&10%  
Stephens'.....25&30%  
Parker's.....20&25%  
Wilson's.....55%  
Howard's.....40%  
Bonney's.....40&10%  
Miller's Falls.....40&10&10%  
Trenton.....40&10&10%  
Merrill's.....15&20%  
Sargent's.....40&10&10%  
Barkus and Union.....40%  
Double Screw Leg.....15&10%  
Prestiss.....20&25%  
Simpson's Adjustable.....40%  
Moore's.....20%  
Massey Quick Action.....20 to 25%**Saw Vices—**Bonney's, Nos. 2 & 3, 15.00.....40&10%  
Stearns'.....35&10&35&10&10%  
Stearns' Silent Saw Vices.....35&10%  
Sargent's.....40&10%  
Reading.....40&10%  
Wentworth.....20&10%**Miscellaneous.**Combination Hand Vices.....gr 42.00  
Cowell Hand Vices.....20%  
Barker's Pipe Vices.....10%  
Cincinnati.....25%  
Enterprise Pipe Vices, each.....35.00  
Massey Combination Pipe.....40%**Wade—Price per M.**J.M.C. & W.R.A.—B. E., 11 up.....68¢  
J.M.C. & W.R.A.—B. E., 9&10.....83¢  
J.M.C. & W.R.A.—B. E., 8.....90¢  
J.M.C. & W.R.A.—B. E., 7.....1.10  
J.M.C. & W.R.A.—P. E., 11 up.....1.15  
J.M.C. & W.R.A.—P. E., 9&10.....1.50  
J.M.C. & W.R.A.—P. E., 8.....1.70  
J.M.C. & W.R.A.—P. E., 7.....1.80  
Sley's B. E., 11 up.....1.70 to 1.75  
Sley's P. E., 11 up.....3.00 to 3.25**Wagon Boxes—See Boxes, Wagon.****Washer Cutters—See Cutters Washer.****Wagon Jacks—See Jacks, Wagon.****Ware, Hollow, Enameled, &c.**Cast Iron, Hollow—  
Stove Hollow Ware—  
Ground.....60&10%  
Unground.....60&10&10%  
White Enameled Ware—  
Mashin Kettles.....70&10&70&10&5%  
Boilers and Saucepans.....50&10&5%  
Tinned Boilers and Spans.....50&10&5%  
Rustless Hollow Ware.....50&10&5%  
Gray Enameled Ware—  
Stove.....50%  
Mashin Kettles.....60&10&10%  
Boilers and Saucepans.....40&25%**Enameled—**Agate and Granite Ware, list Jan. 1, 1889.....33% to 10%  
Ironclad Enameled Ware.....dis 33% to 10%**Kettles—**Galvanized Tea-Kettles—  
Inch.....6 7 8 9  
Each.....55¢ 60¢ 75¢**Standard Size—**Wash-Basins, 10 1/2 in.....\$2.00 \$2.25  
Wash-Basins, 12 in.....2.25 2.75  
Keelers, 11 1/2 in.....4.00  
Cupboards, "Daisy," 8 in.....4.00 4.50  
Peck Measure.....4.00  
Half-peck Measure.....3.50  
See also Falls.**Indurated Fiber—25%**Spittoons, No. 2, dos.....\$0.00  
Basins, Ringed, dos, No. 2.....\$3.00  
Washbubs, Nested, Nos. 0, 1, 2 and 3 (4 pieces), gr nest.....\$7.50  
Keelers, Nested, Nos. 1, 2, 3 and 4 (4 pieces), gr nest.....\$3.70  
Butter Bowls 15, 17 and 19-inch (3 pieces), gr nest.....\$9.25  
Liquid Measures, pt., qt., 2 qt. and funnel (4 pieces) gr set.....\$5.00  
See also Falls.**Silver Plated, Hollow—**4 mo. or 5 1/2 cash in 30 days.  
Reed & Barton.....  
Meriden Britannia Co.....40&25%  
Simpson, Hall, Miller & Co.....  
Rogers & Brother.....  
Hartford Silver Plate Co.....40&25%  
William Rogers Mfg. Co.....**Washers—**Size hole.....5-16 1/4 1/2 3/4 to 1 1/2  
Washers.....6 5 8 5.50 8  
In lots less than 200 B, add 1/4¢, 6-8 boxes 1¢ to list.**Wedges—**Iron.....\$ 3 1/4  
Steel.....\$ 3 1/4**Weights, Sash—**

Solid Eyes.....\$ ton 118&amp;110

**Well Buckets, Galvanized—See Buckets, Well, Galvanized.****Wheels, Well.**

8 in., \$2.25; 10 in., \$2.70; 12 in., \$3.25

**Wire and Wire Goods—****Iron—**Market.  
Br. & Ann., Nos. 0 to 18.....77 1/2¢  
Cop'd, Nos. 0 to 18.....75%  
Galv., Nos. 0 to 18.....67 1/2¢  
Tin'd, Tinned list Nos. 0 to 18.....67 1/2¢  
Stone.  
Br. & Ann'd, Nos. 16 to 18.....77 1/2¢  
Bright and Ann'd, Nos. 19 to 26.....80%  
Br. and Ann'd, Nos. 27 to 36.....85%  
Tinned.  
Tinned Broom Wire, 18 to 21, 1/2 B.....5¢  
Galvanized Fence, Nos. 3 and 9.....70%  
Brass, list Jan. 18, 1884.....35%  
Copper, list Jan. 18, 1884.....35%  
Rab Fence.....See Trade Report  
Annealed Wire on Spools.....55%  
Main's Steel and Tin'd on Spools.....55%  
Main's Brass and Cop. on Spools.....45%  
Tate's Spooled, Tinned and Annealed.....55%  
Tate's Spooled Cop. and Brass.....45%  
Cast Steel Wire.....8 1/2¢  
Stub's Steel Wire.....\$6.00 to 2, 3¢  
Steel Music Wire, 12 to 30, 60&70¢  
Wire Clothes Line, see Lines.  
Wire Picture Cord, see cord.**Bright Wire Goods—**

Standard list.....80&amp;10%

**Wire Cloth and Netting.**

Painted Screen Cloth, good quality, 100 sq. ft., \$1.50

Galvanized Wire Netting.....70&amp;10&amp;75%

**Wire Rope—See Rope, Wire.****Wrenches—**American Adjustable.....40%  
Baxter's Adjustable "S".....40&10&50%  
Baxter's Diagonal.....40&10&50%  
Coe's Genuine.....50&25%  
Coe's "Mechanics".....50&10&25%  
Girard Standard.....65&10%  
Lamson & Sessions' Engineers'.....65&10%  
Lamson & Sessions' Standard.....70&10%  
P. S. & W. Agricultural.....75&10&75%  
Girard Agricultural.....10&5%  
Lamson & Sessions' Agric'l.....  
Bemis & Call's  
Pat. Combination.....35%  
Merrill's Pattern.....35%  
Brigg's Pattern.....25%  
Cylinder or Gas Pipe.....40&10%  
No. 3 Pipe.....40&10%  
Aiken's Pocket (Bright).....\$6.00, 50&10%  
The Favorite Pocket.....dos \$4.00, 40%  
Webster's Pat. Combination.....35%  
Boardman's.....30&10%  
Always Ready.....25&10%  
Alligator.....20&10%  
Donohue's Engineer.....50&10%  
Acme, Bright.....50&25%  
Acme, Nickel.....40&25%  
Hercules.....70%  
Walker's.....55&25%  
Diamond Steel.....55&25%  
Cincinnati Brace Wrenches.....35&10%  
Tate's Vise Wrench.....55&10&25%**Wringers, Clothes—**

Am Winger Co.'s list, July 15, 91, 3% cash

**Wrought Goods—**

Staples, Hooks, &amp;c., list Jan. 12, 1886, 85&amp;85&amp;10%

**PAINTS, OILS AND COLORS.—Wholesale Prices.****Animal and Vegetable Oils.**Lined, City, raw, per gal.....42 ..  
Lined, City, boiled.....45 ..  
Lined, Western, raw.....37 .. 38  
Lard, City, Extra Winter.....54 .. 55  
Lard, City, Prime.....53 .. 54  
Lard, City, Extra No. 1.....42 1/2 .. 45  
Lard, City, No. 1.....37 1/2 .. 40  
Lard, Western, Extra Bleached.....52 .. 53  
Cotton-seed, Crude, prime.....52 .. 53  
Cotton-seed, Crude, off grades.....23 .. 28  
Cotton-seed, Summer Yellow, prime.....37 .. 38  
Cotton-seed, Summer Yellow, off grades.....32 .. 36  
Sperm, Crude.....71 ..  
Sperm, Natural Spring.....71 ..  
Sperm, Bleached Spring.....73 .. 75  
Sperm, Natural Winter.....73 .. 75  
Sperm, Bleached Winter.....73 .. 80  
Whale, Crude.....54 .. 55  
Whale, Natural Winter.....54 .. 55  
Whale, Bleached Winter.....54 .. 55  
Whale, Extra Bleached.....54 .. 55  
See Elephant, Bleached Winter.....63 .. 64  
Menhaden, Crude, Sound.....54 .. 55  
Menhaden, Crude, Southern.....54 .. 55  
Menhaden, Light Pressed.....54 .. 55  
Menhaden, Bleached Winter.....54 .. 55  
Menhaden, Extra Bleached.....54 .. 55  
Tallow, City, prime.....44 ..  
Tallow, Western, prime.....44 ..  
Cocoanut, Ceylon.....64 .. 7  
Cocoanut, Cochiti.....74 .. 8  
Cod, Domestic.....31 .. 33  
Cod, Foreign.....31 .. 33  
Red Elaine.....24 .. 25  
Red Saponified.....5 .. 5 1/2  
Sank.....29 ..  
Straits.....20 ..  
Olive, Italian, bbls.....64 .. 66  
Neatsfoot, prime.....45 .. 46  
Palm, prime, Lagos.....\$ 8 .. 6 1/2**Mineral Oils.**Black, 20 gravity, 25 to 30 cold test.....7 1/4 .. 8  
Black, 20 gravity, 15 cold test.....8 1/4 .. 9  
Black, 20 gravity, summer.....6 1/4 .. 7  
Cylinder light, filtered.....15 .. 20**Cylinder, dark, filtered.....12 .. 15**Cylinder, dark, st'm refined.....10 .. 18  
Paraffine, 23 1/2 to 24 gravity.....13 1/2 .. 14  
Paraffine, 25 gravity.....12 1/2 .. 13  
Paraffine, 28 gravity.....9 .. 10  
Paraffine, red, 21 to 22 gravity.....9 .. 10  
Paraffine, red, 23 1/2 to 24 gravity.....12 .. 14**Paints and Colors.**Barytes, Foreign, \$ ton, 23.00.....\$24.00  
Barytes, Amer. floated.....30.00.....\$32.00  
Barytes, Amer. No. 1.....10.00.....20.00  
Barytes, Amer. No. 2.....13.00.....16.00  
Barytes, Amer. No. 3.....11.00.....12.00  
Blue, Celestial.....\$ 6 .. 8  
Blue, Chinese.....50 .. 55  
Blue, Prussian.....25 .. 40  
Blue, Ultramarine.....8 .. 25  
Brown, Spanish.....1/2 .. 1  
Brown, Vandyke, Amer.....3 .. 3 1/2  
Brown, Vandyke, English.....6 .. 8  
Carmine, No. 40, in bulk, 3.10 ..  
Carmine, No. 40, in boxes or barrels.....3.20 ..  
Carmine, No. 40, in ounce bottles.....4.20 ..  
Chalk, in bulk.....\$ ton 2.00 .. 2.25  
Chalk, in bbls.....\$ ton 2.30 .. 4.0  
China Clay, English.....\$ ton 12.00 .. 18.00  
Cobalt Oxide, prep'd.....\$ 2.00 ..  
Cobalt Oxide, black.....lots 100 B. 3.60 ..  
Cobalt, Oxide, black.....lots 100 B. 2.65 ..  
Green, Paris, in bulk.....14 .. 15 1/2  
Green, Paris, 170 to 175 .. 14 1/2 .. 15 1/2  
Green, Paris, small pack.....16 .. 21 1/2  
Green, Chrome, ordinary.....8 .. 11  
Green, Chrome, pure.....23 .. 25  
Lead, Eng., B.R. white.....8 1/2 .. 10  
Lead, Ann. White, dry or in oil: Kgs, lots less than 500 B.....7 1/4 ..  
Kgs, lots 500 B to 5 tons.....7 ..  
Kgs, lots 5 tons to 12 tons.....6 1/4 ..  
Kgs, lots 12 tons and over.....6 ..  
Lead White in oil 25 B tin pails add to keg price.....\$ 1/2  
Lead, White, in oil, 12 1/2 B tin pails, add to keg price.....\$ 1Lead, White, in oil, 1 to 5 B as-sorted tins, add to keg price.....\$ 2 1/4  
Lead, Red, bbls and 1/2 bbls.....6 1/4 .. 7 1/4  
Lead, Red, kegs.....3 1/2 .. 4 1/2  
Litharge, kegs.....3 1/2 .. 4 1/2  
Litharge, bbls and 1/2 bbls.....6 1/4 .. 7 1/4  
Terms, &c.—Lead and Litharge.—On lots of 500 B or over, 60 days' time or 2 1/2 % discount for cash if paid within 15 days of date of invoice.  
Ocher, French Washed.....1 1/2 .. 2 1/4  
Ocher, German Washed.....1 1/2 .. 2 1/4  
Ocher, American.....1 1/2 .. 2 1/4  
Orange Mineral, English.....9 .. 9 1/2  
Orange Mineral, French.....10 .. 10 1/2  
Orange Mineral, German.....9 1/2 .. 10  
Orange Mineral, American.....8 .. 8 1/2  
Paris White, English Cliff-stone.....1.00 .. 1.15  
Paris White, American.....70 .. 75  
Red, Indian, English.....5 1/2 .. 7  
Red, Indian, American.....3 .. 6 1/2  
Red, Turkey.....9 .. 14  
Red, Tuscan.....9 .. 11  
Red, Venetian, American.....1.00 .. 1.25  
Red, Venetian, English.....1.00 .. 1.50  
Sienna, Italian, Burnt and Powder.....5 .. 6 1/4  
Sienna, Ital., Burnt Lumps.....1 1/2 .. 2 1/4  
Sienna, Ital., Raw, Powder.....5 .. 6 1/4  
Sienna, Ital., Raw Lumps.....2 .. 2 1/2  
Sienna, American, Raw.....1 1/2 .. 1 1/4  
Sienna, American, Burnt and Powdered.....1 1/2 .. 1 1/4  
Talc, French.....1 1/2 .. 1 1/4  
Talc, American.....1 .. 1 1/4  
Terra Alba, Fr'ch, \$ 100 B.....90 .. 1.00  
Terra Alba, English.....50 .. 60  
Terra Alba, American No. 1.....70 .. 75  
Terra Alba, American No. 3.....40 .. 50  
Umber, Turkey, Bnt. and Powder.....3 1/2 .. 4  
Umber, Turkey, R'w Lumps.....2 1/2 .. 3  
Umber, Turkey, Bnt. Amer.....1 1/2 .. 1 1/4  
Umber, Turkey, R'w Amer.....1 1/2 .. 1 1/4  
Yellow, Chrome.....10 .. 20  
Vermilion, Amer. Lead.....11 1/2 .. 17  
Vermilion, Quicksilver, bulk.....64 .. 68  
Vermilion, Quicksilver, bags.....65 .. 67  
Vermilion, Quicksilver, smaller pkgs.....69 .. 71  
Vermilion, English Import.....80 .. 85Vermilion, Imitation, Eng.....8 .. 25  
Vermilion, Trieste.....87 1/2 .. 90  
Vermilion, Chinese.....90 .. 95  
Whiting, Common, \$ 100 B.....40 .. 45  
Whiting, Gliders.....50 .. 55  
Zinc, American, Dry.....4 1/2 .. 5  
Zinc, French, Red Seal.....4 .. 5 1/4  
Zinc, French, Green Seal.....8 .. 8 1/2  
Zinc, French, V. M. X.....7 ..  
Zinc, Antwerp, Red Seal.....7 1/2 .. 7 1/4  
Zinc, Antwerp, Green Seal.....8 1/2 .. 8 1/4  
Zinc, German, L. Z. O.....8 .. 9  
Zinc, V. M. in Poppy Oil, Seal, lots of 1 ton and over.....10 1/2 .. 11 1/4  
Zinc, V. M. in Poppy Oil, lots less than 1 ton.....11 .. 11 1/4  
Zinc, V. M. in Poppy Oil, Red Seal.....10 .. 10 1/4  
lots of 1 ton and over.....10 1/2 .. 10 1/4  
Lots of less than 1 ton.....10 1/2 .. 10 1/4  
Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1 ¢; 25 bbls. 2 ¢, 50 bbls. 4 ¢. No discount allowed on less than bbl. lots.**Colors in Oil.**Blue, Chinese.....\$ 25 .. 40  
Blue, Prussian.....29 .. 45  
Blue, Ultramarine.....12 .. 18  
Brown, Vandyke.....8 .. 12  
Green, Chrome.....8 .. 13  
Green, Paris.....16 .. 18 1/2  
Sienna, Raw.....7 .. 14  
Sienna, Burnt.....7 .. 14  
Umber, Raw.....7 .. 10  
Umber, Burnt.....7 .. 10**Putty.**In wooden pails......01 1/4  
In tin cans......02 .. 02 1/2  
In bladders......07 .. 02 1/2**Spirits Turpentine.**In regular bbls.....25 1/2 ..  
In machine bbls.....36 ..**Glue.**Low Grade.....\$ 3 .. 10  
Cabinet.....12 .. 14  
Medium White.....13 .. 15  
Extra White.....17 .. 20  
French.....10 .. 23  
English.....10 .. 15  
Irish.....18 ..

